

FLIGHT

The
AIRCRAFT ENGINEER
AND AIRSHIPS

First AERONAUTICAL
WEEKLY IN THE
WORLD

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OF AVIATION

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A Dream Come True

THE presence of the Secretary of State for Air, the Postmaster-General, the Chairman of Imperial Airways, and the High Commissioner for New Zealand, together with special bags of mail from the King and other members of the Royal Family, marked the departure of *Hengist* from Croydon last Saturday with the first regular air mail for Australia. It would, indeed, have been impossible to overstate the importance of the occasion. It was, as Sir Eric Geddes said, "as a dream coming true."

The coupling up of this last link in the longest of our Empire airways has, indeed, fulfilled an ambition which has haunted our dreams for many years past. Had no international difficulties intervened it would still have been a notable feat for Imperial Airways to have pushed through by successive stages to Egypt, to Iraq, to India, to Malaya, and finally to Australia. But the difficulties to be overcome were not merely technical and financial, though these were sufficiently complicated. In the first place, tribute must be paid to the Royal Air Force, and to the memory of Sir Geoffrey Salmond. Under his inspiration the R.A.F. not only made the first string of aerodromes from Egypt to South Africa, but also started the first air mail between Baghdad and Cairo. Wing Commander (now Group Captain) Roderic Hill, in his excellent book, *The Baghdad Air Mail*, wrote: "I think it is fair to say that the route could never have been pioneered by a civil organisation." When the service had been run for some years by the R.A.F., Imperial Airways took it over.

Then it was decided to extend the route to India, and one chilly December morning in 1926 the Air Minister, Sir Samuel Hoare, set out at dawn with a party in a "Hercules" to inaugurate the first regular air service between Britain and India. The flight was quite successful, but the plans seem to have been laid

by mice rather than by men, for they went grievously agley. The Persian Government raised difficulties, and over two years were to pass before Imperial Airways could obtain permission to fly regularly along the northern shore of the Persian Gulf. The route via Basra, Bushire-Bundar, Abbas-Jask was the shortest, but it was never satisfactory, and in 1933 it was decided to abandon it and follow the Arabian shore of the Gulf. Again the R.A.F. gave yeoman help, and the "Rangoon" flying boats of No. 203 (F.B.) Squadron at Basra first explored the route.

The Indian Problem

IMPERIAL Airways realised as well as did everyone else that Indian commerce could not gain very much from an air service which stopped short at Karachi.

Calcutta and Bombay are the main centres of commerce, with Madras as an important third. To the merchants in all those cities Karachi was but a name on the map, an out-of-the-way place which trains took a very long time to reach. Letters despatched to Karachi sometimes missed the homeward aeroplane, and had to wait a week for the next. The Government was suffering from the depression and could find no money to subsidise an air service from Karachi to Calcutta, while they took up the position that when and if any such subsidy were granted, it should only go to an Indian company.

At last the Home Government decided to shoulder the responsibility for subsidising the air service from Karachi to Calcutta, Rangoon and Singapore. An Indian company, Indian Transcontinental Airways, was formed to co-operate with Imperial Airways in running the service, and the extension was duly made in 1933. The Indian problem had been solved at last and the way lay open to Australia.

On to Australia

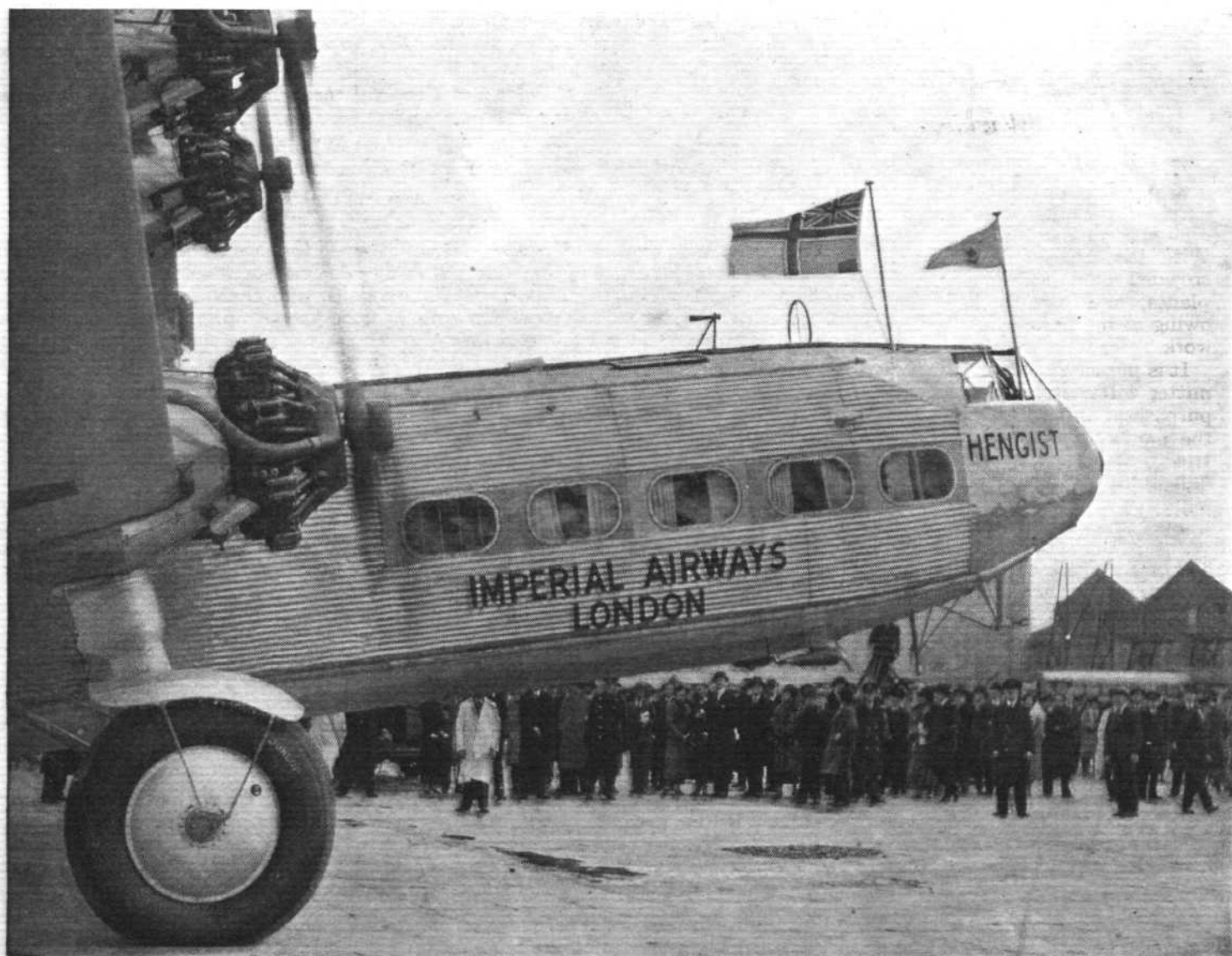
THE Australian Government decided that it would manage the section from Singapore to its own country, thus showing a spirit entirely in contrast with that of the Indian Government. The Commonwealth authorities have been airminded for many years past, and the Government's liberal but judicious system of air mail subsidies had built up a number of air lines inside Australia which for years set an example to the world for safety, regularity, technical efficiency, and—a most notable point—of usefulness to the districts served. Perhaps defence considerations may have prompted the Commonwealth to insist on controlling the airway to Singapore; at any rate, the authorities wished to secure for the very live Australian lines a share in the business of bringing the Home mails to Australia. The contract was to go to an Australian company.

Imperial Airways and Qantas thereupon joined hands, and the new firm of Qantas Empire Airways was registered in Australia. All the local experience of Mr. Hudson Fysh and his colleagues is available for the last section of the great trunk line, while the participation of Imperial Airways ensures uniformity of method and great resources to back the new enterprise.

The trunk line runs from Darwin to Brisbane. Other contractors will feed the other Australian capitals. The firm formed by Mr. C. A. Butler will take the mails from Charleville to Cootamundra, where they will be put on the train for Sydney and Melbourne. The MacRobertson-Miller firm will take other mails from Katherine down the west coast to Perth. Other lines will cross from Melbourne to Tasmania.

The Gap

CURIOSLY enough, the European end of the line has given more trouble than even the Persian Gulf section. Imperial Airways have had to vary their Mediterranean port, sometimes using Genoa, sometimes Salonika, and now Brindisi. The ideal port is Marseilles, whence flying boats should cross Italy to Greece and Egypt. Italy is agreeable to this plan, but France is now trying to drive a hard bargain. As yet the freedom of the air is an ideal, not an accomplished fact. The train journey from Paris to Brindisi is not popular with passengers who wish to fly, and it adds considerably to the journey time of the mails. The negotiations are in the hands of the Foreign Office, and it is much to be hoped that a satisfactory agreement will soon be reached.



WINGED WORDS: *Hengist*, her Civil Air Ensign and Air Mail Pennant fluttering, prepares to take off from Croydon with the first Australian Air Mail. The significance of the occasion is discussed in the leading article on the previous page and above. (*Flight Photo.*)

The Outlook

A Running Commentary on Air Topics

Fog Landings

IT can, perhaps, be considered a lucky coincidence that wireless developments have marched hand in hand with aeronautical progress. Modern air travel in northern latitudes would only be possible on three hundred of the three hundred and sixty-five days of the year if the pilots and control staff were without its help.

Flying out of a fogbound aerodrome with a modern machine is safe enough so long as the "arrival" aerodrome is reasonably clear and so long as the pilot can learn immediately of any change there for the worse.

The time has now come when absolutely reliable methods of fog approach and actual landing are needed if flying is to become the accepted method of first-class high-speed transport.

Given the necessary space and the necessary clear approaches, a method such as "ZZ" is safe enough, but it depends on the control officer and is difficult when more than one or two machines are waiting to be given the "all clear." Passenger machines simply cannot be left in mid-air while another pilot makes several attempts to get in.

With regular blind landings, there must come the commercial aeroplane which will sink fairly gently and under complete control in the stalled attitude.

Wireless Control

AT Croydon they are doing wonders; day after day air liners are brought over from the Continent and into the aerodrome, often without their pilots having seen anything of the ground from the time they took off. With the growth of traffic, the air is rapidly becoming crowded with radio transmissions as well as with aeroplanes, and already serious difficulties are experienced owing to the limitations of the wave band allotted for this work.

It is pleasing to learn, therefore, that a short-wave transmitter will soon be installed at Croydon, primarily for the purpose of inter-station communication, but also so that the possibilities of short-wave work with aircraft can be tried out. Short-wave transmission generally obviates difficulties due to atmospheric interference, but it also makes the elimination of noise due to the engine-ignition system more important than ever.

Ignition Screening

THOSE who examined the American engines of the aeroplanes taking part in the England-Australia Air Race will have been struck with the neat and practical way in which the ignition systems were screened in order to prevent interference with the wireless equipment.

Our engines have their ignition leads from the magnetos to the plugs each individually braided and clipped together in bundles. If one lead fails the whole mass has to be unclipped before the faulty lead can be replaced. The American system provides a large metal screening conduit which is attached to the magnetos by a detachable plug, and to the sparking plugs by detachable short lengths of braided cable. Inside the conduit are short lengths of unbraided, and therefore light, cable running from the magneto connection to the sparking plug lead connections. Any short length can be replaced with ease, the system is much neater, and the use of a great deal of heavy and expensive braided cable is obviated.

In England the general policy has been for all military aircraft to be most carefully screened, but commercial users

of aeroplanes have jibbed at the cost and trouble. Wireless manufacturers have therefore endeavoured to produce installations which do not call for much screening of the ignition system. However, with the increased sensitivity demanded of receivers screening is becoming more necessary, and there would seem to be an opening here for a manufacturer of complete screened-ignition systems ready for fitting to various engines. This is done in America, but not, so far, in this country. It is a specialist's job, and one which demands greater attention than it has so far received.

Performance With Economy

HEAVILY loaded commercial aeroplanes require maximum power for the take-off. To achieve this, high-compression and/or supercharged engines are being fitted. These engines require a high-octane fuel when full power is used, otherwise detonation and loss of power occurs. Fuel of a high octane value is expensive, but without it machines of this nature cannot get into the air with a full load.

A solution which permits the use of full power when required, but which allows economy to be practised at other times, has been evolved by some of the American air lines. A small tank is fitted containing fuel of 87 octane value, which is used for the take-off. For cruising the supply is changed over to the main tanks, which contain a cheaper fuel of only 80 octane value.

Flapped Safety

JUDGING from the experiences of a member of the Staff of *Flight* who has been flying the first British light aeroplane to be fitted with split flaps, the possibilities of safer flying have not, by any means, been exhausted. This particular machine lands somewhere "off the clock," glides in slowly and steeply and under full control at any speed down to 40 m.p.h., and cruises at about 125-130 m.p.h. The complete speed range has a ratio in the vicinity of four to one—which is quite unusual for a standard machine.

Nevertheless, this wide speed range is not the most useful feature of the machine. By means of the flaps the novice pilot can obtain a wide variety of safe approach angles at will, and can put this usefully fast machine into very small aerodromes and fields without difficulty and without resorting to dangerously slow flying.

The Future

FOR a number of years joy-flying pilots have been in the habit of using extremely small fields with a variety of aeroplanes, and they have learnt to bring in the most unsuitable machines "on the edge of nothing." But when the novice starts this sort of thing he is liable to appear in the following day's front-page news. His alternative is to fly a type which can be brought in slowly with safety and which, consequently, does not usually possess a particularly high operating speed.

There is no doubt that similar devices will alter all our ideas of performance range and will bring the low-powered 200 m.p.h. machine, which, at present, is safe only in expert hands, into the private owner's category.

Meanwhile the use of split flaps has been shown, in just one case, to be entirely without unpleasant control effects. What has been done once can be done again. We no longer need to look on flaps as useful fittings only for the pilot who fully realises their dangers in careless operation.

THE BLACKBURN "SHARK"



A General-purpose Coastal Protection Aeroplane for Torpedo Operation, Bombing, Fleet Gunnery Spotting and Reconnaissance : Adaptability as a Ship-plane, Landplane, or Seaplane

DEVELOPED from the Blackburn T.S.R., which has performed so well in Service trials, the new "Shark" not only appears to be extremely effective for the purposes for which it is designed, but also embodies many unusually interesting features.

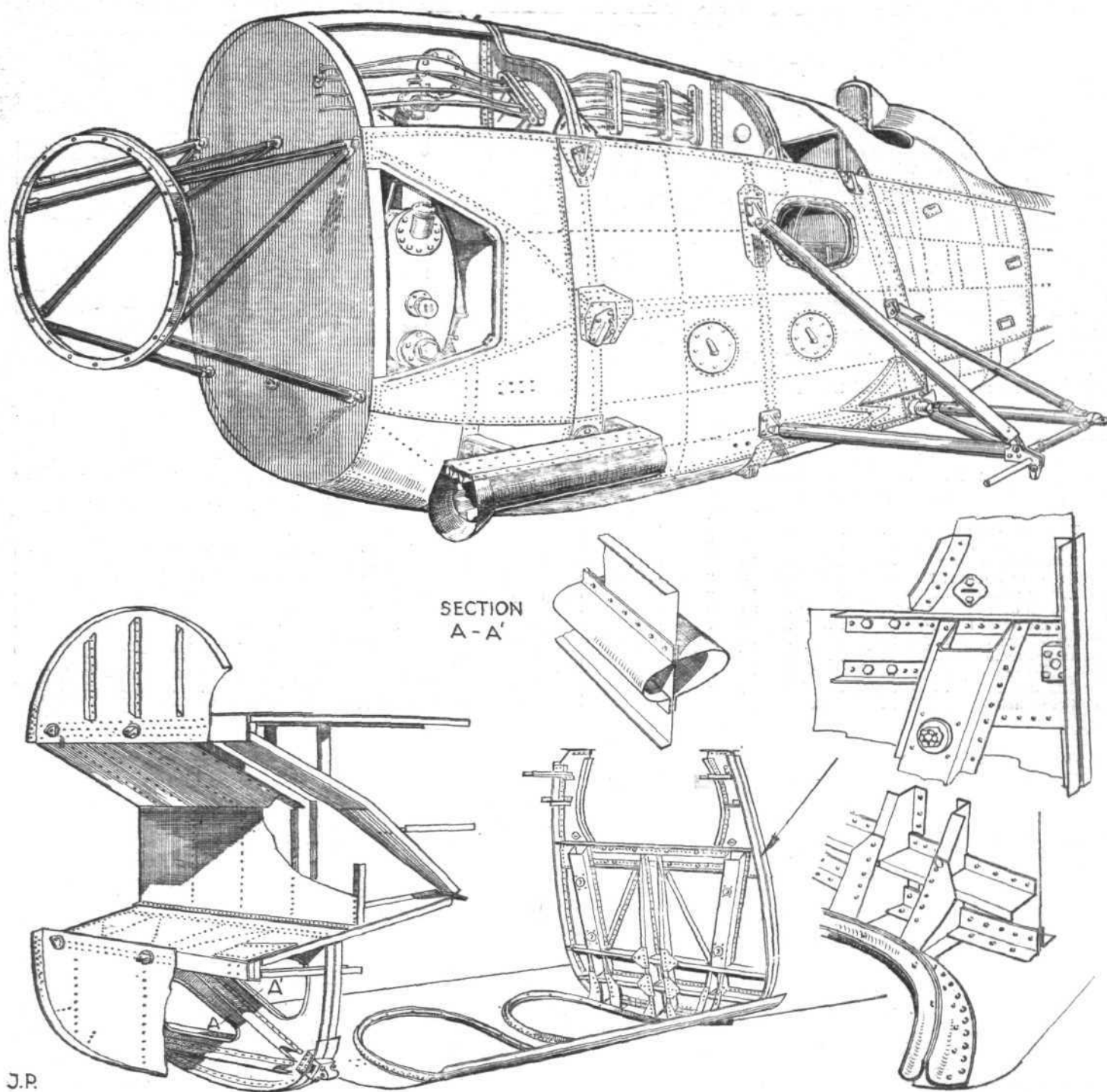
It is a strut-braced biplane of sesquiplane form, with a monocoque light alloy fuselage having cockpit accommodation for two or three persons according to the work upon which the machine is to be employed. The engine can be either the Armstrong Siddeley "Tiger" of 700 h.p. or the Bristol "Pegasus III M" of 690 h.p. The normal land undercarriage is in two widely spread and entirely separate halves, allowing ample room for the stowage of a torpedo, and a twin-float undercarriage has been designed to be interchangeable.

The "Shark" is truly a general-purpose machine for coastal protection. As a torpedo-bomber it can carry a torpedo or a load of bombs weighing about 1,500 lb. (680 kg), a crew of two, and fuel for about 625 miles (1,005 km) as a land machine, or 548 miles (882 km) as a seaplane. When it is used as a Fleet Spotter Reconnaissance machine no bombs are carried, and with a crew of three, the fuel load will suffice for 792 miles (1,274 km) as a landplane and 690 miles (1,110 km) as a seaplane, while if it is desired still further to increase the range an additional tank may be slung in the torpedo crutches, putting the mileage up to 1,130 miles (1,820 km) and 990 miles (1,590 km.) respectively.

It will be seen that the "Shark" embodies in itself the *desiderata* of several types of aircraft, and it is, there-



NOTEWORTHY : A three-quarter front view of the "Shark," which shows clearly the strut bracing of the wings. (Flight Photo.)



J.P.

These drawings show the monocoque construction of the centre and front portions of the fuselage. At the bottom, on the left, are the manholes through which the fuel tanks are offered up into the fuselage; the holes are then closed with water-tight doors.

fore, not only economical from the point of view of initial outlay, but also from that of maintenance, and, furthermore, because of the large load it carries.

Apart from those already mentioned, the "Shark" possesses several important features which make it particularly attractive for use with the Fleet. As the machine is designed for use on an aircraft carrier, outlook is important and the sesquiplane arrangement of the wings provides it, at the same time giving rapid acceleration and excellent control at low speeds. Good take-off and slow landing characteristics are provided by an arrangement which allows of drooping the ailerons so that they have the same effect as wing flaps.

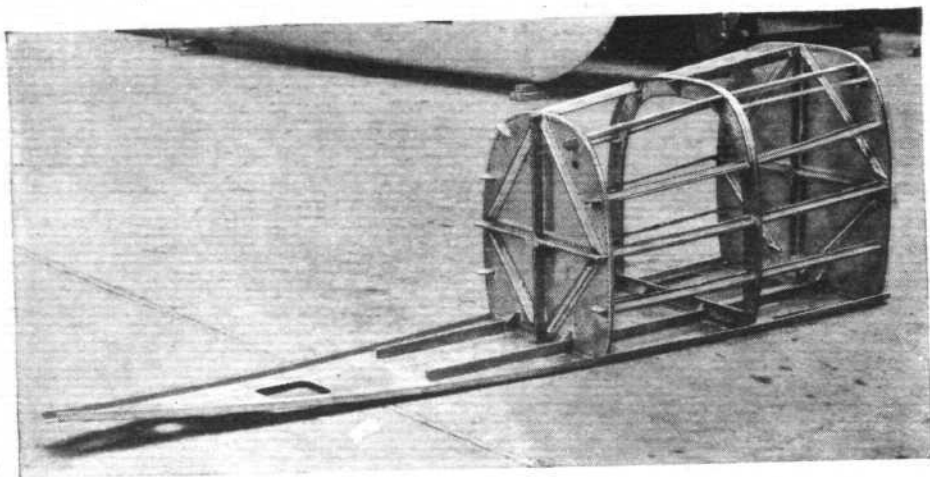
The wings fold, and this manoeuvre is made more rapid by having a hydraulic pump in each bottom centre plane, by means of which the wing root locking pins securing both the upper and lower wing spars to the centre section

spars can be withdrawn or engaged simultaneously by the operation of one hand lever.

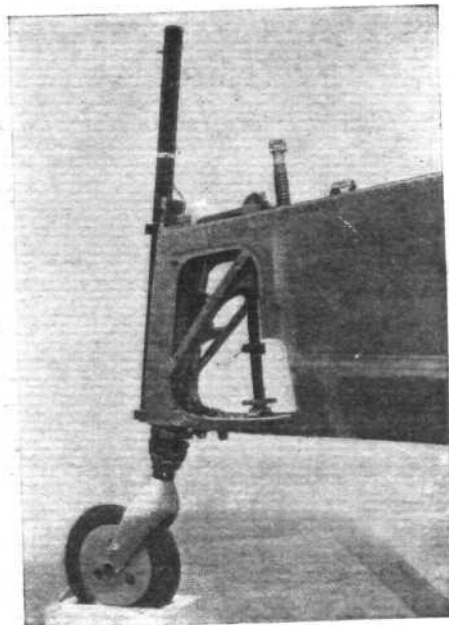
The fuselage is perhaps the most interesting part of the whole machine. As the aircraft is for shipboard use there are fittings for catapult launching and for arresting gear, while slinging gear is provided for launching or taking-on board as a seaplane.

The whole of the fuselage is constructed of Alclad with built-up transverse watertight frames, light longitudinal stringers and a covering of riveted sheet forming a monocoque structure. The most important part about the fuselage is that practically the whole of it is divided into watertight compartments, so that in case of forced landing at sea it would float.

The mainplanes have stainless steel tubular spars, drawn by Boulton Paul of their patent interlocking section. In the top planes the spars have tubular booms and plate



The rear portion of the fuselage without its outer plating.



Fuselage construction at the tail.

BLACKBURN "SHARK"
700 h.p. Siddeley "Tiger" Engine

DIMENSIONS

	ft.	in.	m
Top wing span ...	46	0	(14.03)
Top wing chord ...	7	3	(2.2)
Bottom wing span ...	36	0	(11.0)
Bottom wing chord ...	6	0	(1.83)
Folded width ...	15	0	(4.58)
Length overall ...	35	3	(10.75)
Height overall ...	12	1	(3.68)
Wheel track ...	10	3	(3.12)
Aspect ratio ...	6.12 to 1		
Incidence ...	5°		
Dihedral ...	11°		
Sweepback ...	5°		

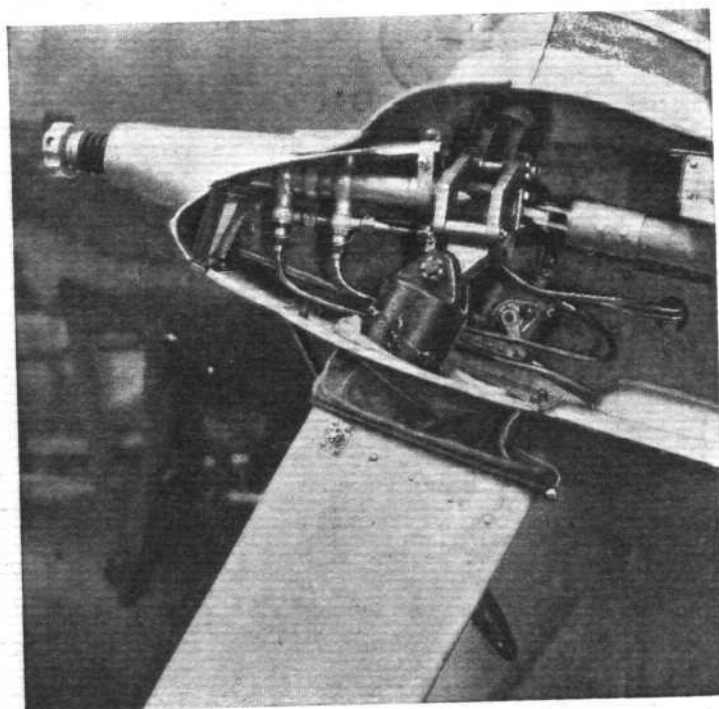
AREAS

	sq. ft.	m ²
Mainplanes with allersons ...	489.0	(43.43)
Ailerons top (2) ...	52.1	(4.84)
Ailerons bottom (2) ...	36.7	(3.41)
Tail plane... ..	34.48	(3.19)
Elevators (2) ...	29.08	(2.69)
Fin	4.0	(0.37)
Rudder	19.24	(1.78)

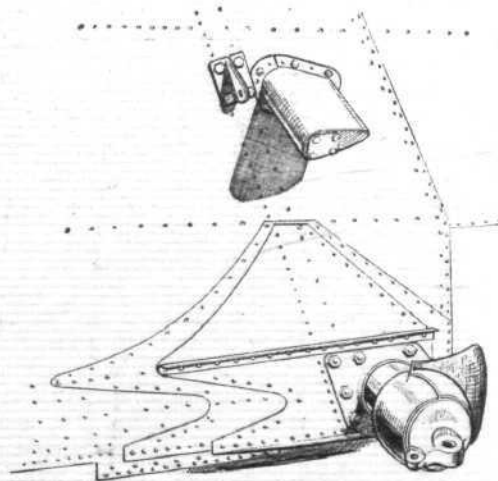
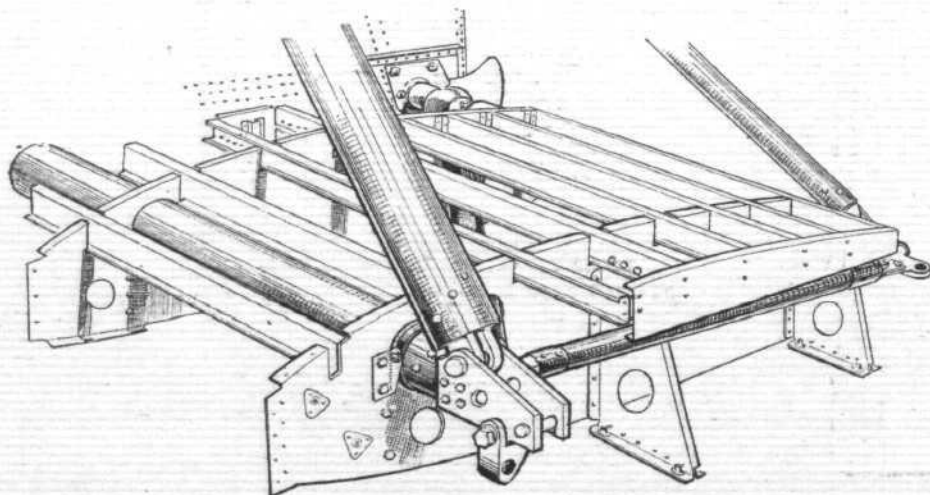
PERFORMANCE AS TORPEDO BOMBER LANDPLANE

	lb.	kg
Weight empty ...	4,039	(1 830)
Military load ...	2,712	(1 229)
Fuel, 158 gall. (718 l) ...	1,216	(551)
Oil, 9 gall. (41 l) ...	83	(38)
Gross weight ...	8,050	(3 648)
Wing loading ...	16.1 lb./sq. ft. (78.4 kg/m ²)	
Normal power loading ...	10.8 lb./h.p. (4.9 kg/hp)	
Maximum speed 150 m.p.h. at 6,000 ft. (241 km/h at 1 830 m)		
Stalling speed ...	63 m.p.h. (101.5 km/h)	
Rate of climb at sea level ...	895 ft./min. (4.55 m/sec)	
Service ceiling ...	16,000 ft. (4 885 m)	
Climb to 15,000 ft. (4 575 m) ...	33 min.	
Range at 8,000 ft. (2 440 m) at 110 m.p.h. (177 km/h) ...	625 miles (1 005 km)	

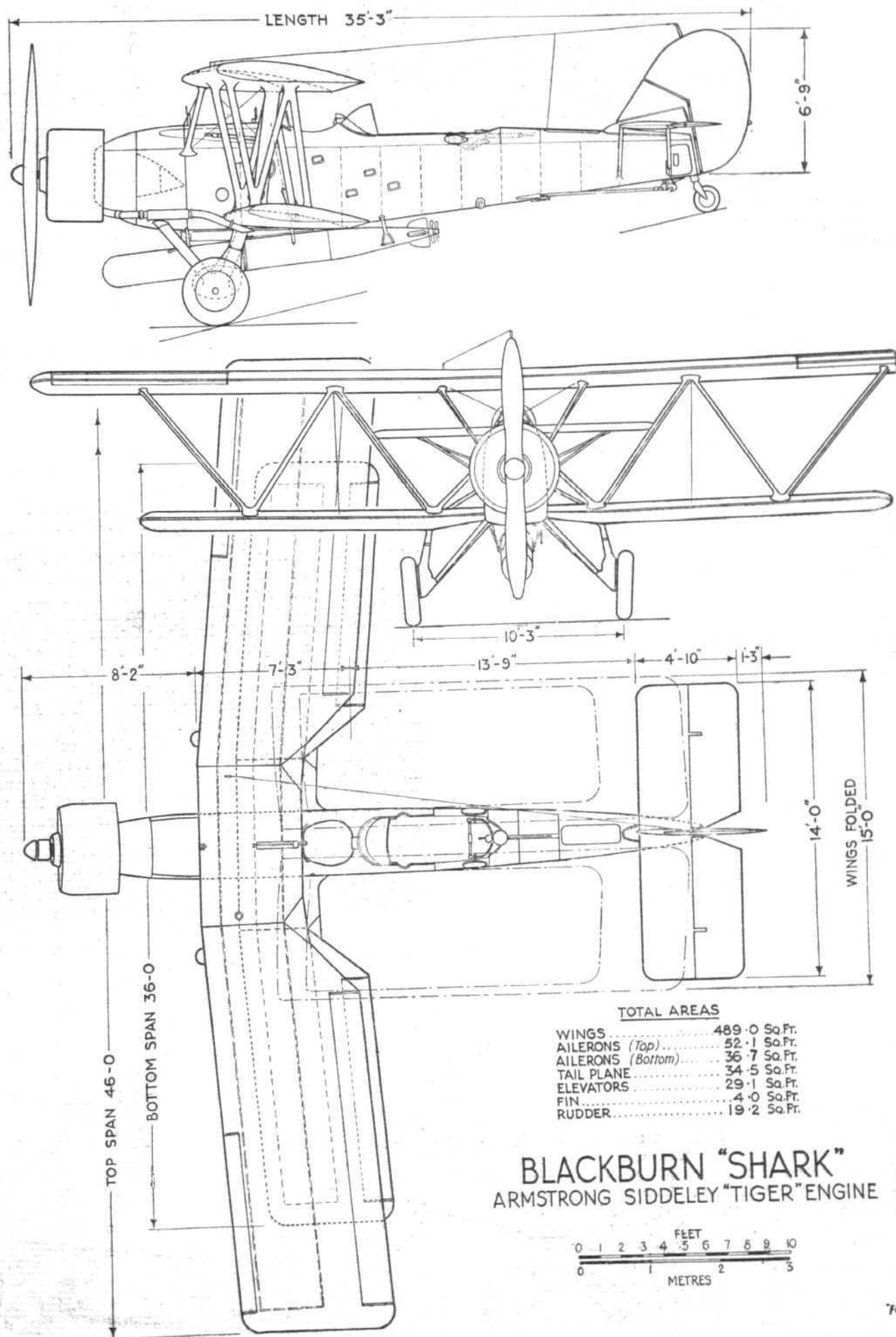
(Flight
Photos.)



A close-up of the bottom front spar fitting, showing the hydraulically operated pin. The lever is half hidden behind the undercarriage leg.



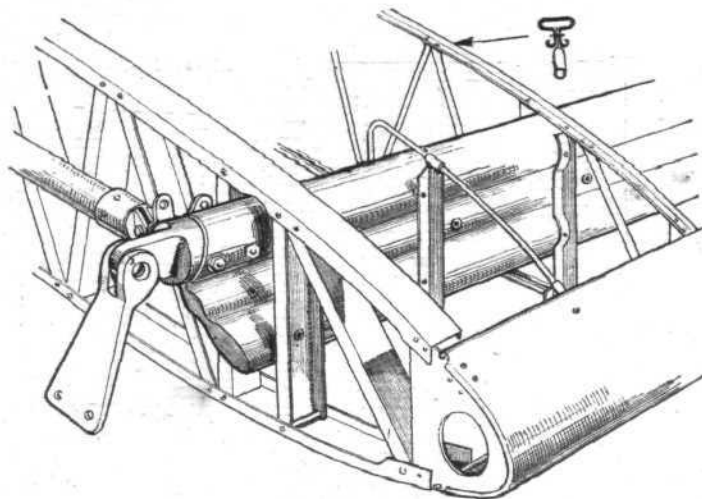
A bottom wing centre-section. On the right is the rear spar fitting, which is also a catapult connection.



webs, but the bottom planes the spars are of the figure of eight type. Throughout, the ribs are of light alloy. The wing tips are separate detachable sections which can be replaced in case of damage. The ailerons have steel tubular spars and light alloy ribs, and are Frise balanced. The wings may be folded with the bomb load in place. The tail plane, elevators and rudder are of similar construction with steel tube spars and duralumin ribs, and, like all the covered surfaces, are covered with doped fabric. The fin is a separate structure of Alclad, with a light alloy framework.

The main fuel supply is carried in two duralumin tanks riveted on the de Bergue system, mounted in separate compartments in front of the pilot; these compartments are watertight. A third tank is carried as reserve in the front of the fuselage top decking.

From these details it will be seen that the Blackburn "Shark" sets a new standard in the construction of sea-going aircraft. It is a design which should be both easy to maintain and eminently suitable for Service use, particularly owing to the wide range of duties for which it has been designed and on which it may be employed.



The root end of a lower outer plane. The spar is one of Boulton Paul's drawn sections of wrap-jointed steel tube.

WING FLAPS

Some Technical Considerations : Points from a Paper Read before the R.Ae.S.

LAST Thursday, before the Royal Aeronautical Society, Mr. R. P. Alston read a paper entitled "Wing Flaps and Other Devices as Aids to Landing." He pointed out that although the speed of landing an aircraft should be the minimum practicable, very low landing speeds had the possible disadvantage that there might not be sufficient aerodynamic control to compete with gusts, etc.; continuing, he said that the tendency in recent years had been to increase aerodynamic efficiency by streamlining, and to increase the wing loading. The combined result was a large increase in the distance an aircraft travelled before coming to rest after clearing an obstacle.

The aeroplane designer was faced with the problem of devising some form of air brake combined with means of increasing the maximum lift coefficient. At present there were two schools of thought: That which aimed at getting back to the old war-time standard of a gliding angle of 10 deg. and a stalling speed of 50 m.p.h., and the other, which went much farther, thinking that an autogiro type of landing should be aimed at. The requirements of the first school could be met by various devices which recently had received much publicity, and which formed the main object of the paper.

There were two ways of increasing the maximum lift coefficient; one was to delay the stall so that the normal lift curve was continued to a higher angle of incidence; the other consisted in providing means of increasing the lift at all incidences without altering the incidence for maximum lift. Examples of the former were the Handley Page slot and the Mattioli "Diruptor."

Turning to the second method of increasing the maximum lift coefficient, the lecturer stated that in order to increase the lift of a wing at all incidences it was necessary to create an increased circulation. One way of doing this was by using a variable camber. Wings of this type had fallen into two general classes: that in which the profile was kept smooth, and that in which a definite discontinuity in the curvature was present. Few of the former had proved practicable mechanically, and had suffered from the disadvantage that the increased camber had been localised at a point about one-third of the chord back from the leading edge, a location which produced an early stall. The plain trailing edge flap was the best example of the latter class. In this the change in camber occurred at

the rear spar and therefore did not lead to an early stall.

Another way of stimulating circulation was to place an obstacle on the under surface of the wing near the trailing edge. The way in which this acted on the lift was investigated by Gruschwitz and Schrenk in Germany, and in 1932 they published a paper describing the results of experiments with flat plates projecting from the lower surface of the wing. They enounced a rational theory which covered all split flap devices for increasing lift. According to their theory the function of the obstacle was partly to build up the pressure in front of it, but principally to create a wake, thereby reducing the pressure under the trailing edge. This reduction of pressure at the trailing edge depressed the whole level of pressure of the upper surface and enabled the boundary layer to sustain an increased pressure gradient.

Schrenk deduced that the increase in maximum lift coefficient produced by any given obstacle would be proportional to the existing maximum lift coefficient without the obstacle, the stalling incidence being unaltered. The last deduction had not been adequately checked, and various model tests had given results more consistent with an absolute rather than a proportional increase.

Schrenk's other principal deduction was that the greatest suction would occur two or three times the width of the obstacle behind it, and that consequently the obstacle need not be very close to the trailing edge. This deduction had not been borne out by model tests. All results so far showed a progressive increase in maximum lift coefficient as the obstacle was moved back towards the trailing edge.

One of the first firms in America to use a hinged split flap was the Northrop Corporation. Their version was a 20 per cent. chord flap hinged at its forward edge through a maximum of 50 deg. The "Zap" flap, named after its inventor Zaparka, was a split flap, the front edge of which was moved back as the flap opened, in such a way that the trailing edge of the flap was immediately below the trailing edge of the wing.

The lecturer then mentioned the Handley Page slotted flap, and the extension of a similar principle, the Fowler flap, which gave, in addition, variable area.

The last part of Mr. Alston's paper, dealing with actual wind tunnel tests and other data, will be published in *The Aircraft Engineer* of December 27.

OUR AIR DEFENCE

Problems of Raising the New Squadrons : The Progress Made

UNDER war conditions, as everyone knows, an air force can be created speedily." So said Mr. Baldwin in the recent House of Commons debate on defence. In peace time it is not such a simple thing to raise even a squadron of the Royal Air Force. It takes three years to turn a raw hand into an accomplished mechanic in charge of aircraft. It takes a year to train a pilot to fly and to perform the ordinary duties of an officer, and then he still has a lot to learn before he is a really useful member of a squadron. To quote once more the Lord President of the Council:—

"There is all the difference in the world between the finest qualified flying pilot in civilian service, driving an air mail, or anything like that, and the man who has to go into action against an enemy. The two jobs are not comparable. You can be the finest pilot that ever was, but before you can go out in war, if you are not going to be shot down at once, you have to go through an intensive course of learning to defend yourself."

Add to the problems of raising and training the men the further problems of providing them with aircraft and engines and all the other equipment which a unit needs, and then you still have to find aerodromes and buildings to house the officers and men. Yet within the next two years the Air Ministry has to raise, equip, and house no fewer than twenty-five squadrons.

Re-equipment of Squadrons

Flight commented briefly last week on some of the special difficulties concerning the supply of aircraft at this juncture, in that many of the existing squadrons are in need of re-equipment with up-to-date types. We have at present in A.D.G.B. seventeen squadrons of fighters, including three of the A.A.F., of which three are equipped with the interceptor "Fury," six have or are getting the two-seater "Demon," one is getting the new "Gauntlet," and seven have the now obsolescent "Bulldog." None of these types can be expected to hold the field very much longer, for even the best of them (with the exception of the "Gauntlet") have been in production for several years. The "Gauntlet," although it has a top speed of over 230 m.p.h., is only regarded as an interim replacement type.

At present eight new types of fighter aeroplane are entered for the replacement competition, and will shortly be going to Martlesham for their tests. These types are the Supermarine monoplane with "Goshawk" engine, the Westland with a "Goshawk" behind the pilot, the "Bulldog IV" with "Perseus," a Hawker P.V. ("Goshawk"), a Bristol P.V. ("Goshawk"), a Blackburn ("Goshawk"), a Bristol ("Mercury"), and a Gloster ("Mercury"). It may be taken that the best of these eight will far surpass the performance of the best now in service, and the result may be that in future there may be no distinction between interceptors and day-and-night fighters. Therefore, before long, all the existing fourteen regular squadrons of fighters and three fighter squadrons of the Auxiliary Air Force will need re-equipment, while seven or eight more fighter squadrons are being raised at the same time and will also need modern machines. To provide 288 first-line fighters with the necessary reserves is in itself no small task.

Then, if we turn to the day bombers, what is said above about the "Demon" applies also to the "Hart." It is very good, but it has been in service for some years. The "Gordon" is an adaptation of the Fairey III F, so can hardly expect to survive for many more years. The "Sidestrand" has already been outclassed by the "Overstrand" from the same aircraft firm of Boulton Paul. The "Wapiti" of some Auxiliary Air Force squadrons has likewise been honoured by the time which it has been

in service, and the "Wallace" is a development of it.

We therefore find in A.D.G.B. ten regular, two Cadre, and five A.A.F. squadrons of day bombers which will all need new types either at once or in the not distant future. That means 202 new machines in the first line. Of the twenty-two new squadrons which are to be raised, probably fifteen will be bombers, but the proportion of day bombers to night bombers cannot yet be estimated. It might be ten squadrons with twelve machines each, and five squadrons with ten twin-engined machines. They will need some 170 aeroplanes of modern type.

There are now only five squadrons of heavy twin-engined night bombers in the regulars and three similar Cadre squadrons. Probably plans are already in hand to provide all of these with either the "Heyford" or the "Hendon" before long, so that they add little to the problems lying ahead. Apart from them, we have made out a fairly urgent need for some 660 new first-line machines, not counting reserves or training machines.

In peace time it would be wasteful to use war-time methods of production. That does not imply that we ought not to make preparations for expansion in time of war. As a matter of fact, a few years ago Air Commodore Charlton was given the task of drawing up a scheme in conjunction with the aircraft and engine firms, which provides for expansion of production in case of war. Naturally, the details of the scheme have not been published, but we do know that it is not being allowed to moulder in a pigeon-hole. It is being kept up to date.

The above calculations refer only to Air Defence of Great Britain. The Fleet Air Arm will add its quota to the problem, for, although only three new squadrons of the F.A.A. are to be raised in the next two years under what may be called the Baldwin plan, yet the units of the F.A.A. are now in a state of re-equipment.

Training-school Expansion

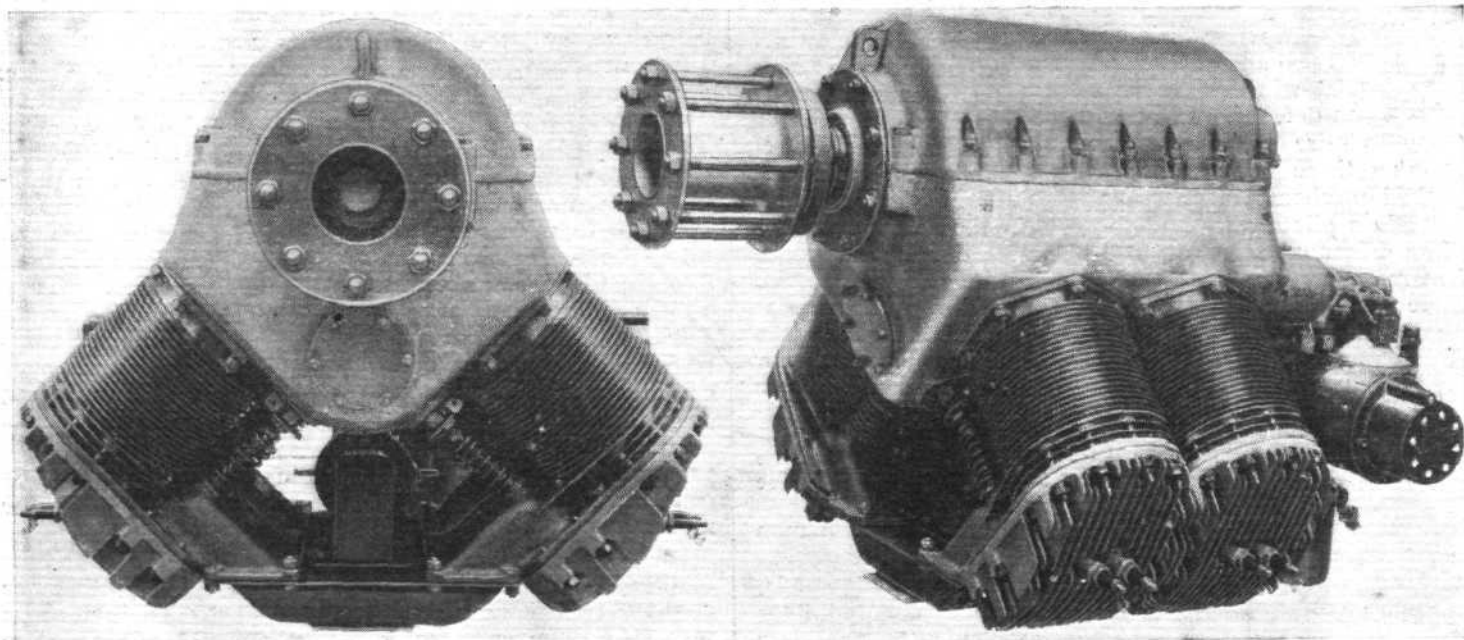
To raise the men for the new squadrons will also mean a special effort. More cadets will be accepted at Cranwell. The Flying Training School at Digby has been reopened, and another F.T.S. is to be opened somewhere else—the place has not yet been decided upon. That will give us four F.T. schools in the country for training short-service officers. The capacity of a F.T.S. is about fifty pupils a year. It would be a very good thing to increase the number of permanent commissions offered to university candidates, and possibly to increase, temporarily at least, if not permanently, the establishment of the Air Squadrons at Oxford and Cambridge. This will most probably be done. At present the establishment of a University Air Squadron is only seventy-five members.

The number of aircraft apprentices at Halton is to be doubled, and, presumably, more aircrafthands will be taken in by direct enlistment, all of which reduces unemployment.

The new aerodromes which have been acquired are Manby in Lincolnshire, Marham and Feltwell in Norfolk, Odiham in Hampshire, and Thorney Isle, near Chichester, in Sussex. In all, eleven sites have been finally selected, and about eighty more sites in various counties have been inspected in detail. An architect has been deputed by the Office of Works to take charge of the plans for aerodrome buildings, and the plans will be submitted to the Fine Arts Commission, to ensure that considerations of economy and utility do not result in plastering the country with buildings abhorrent to good taste. A committee of women has been formed to advise on the domestic side of the barracks and mess buildings, as it is held that women are more expert on that side.

AN INVERTED VEE-FOUR ENGINE

Air-cooled Side-valve 90 h.p. Unit for Light Aircraft



This front view of the GAL-V/4 emphasises the neatness of the design and shows the short, efficient induction passages.

A three-quarter view: note the accessibility of the cylinder heads, freedom from external piping and general compactness. (*Flight Photos.*)

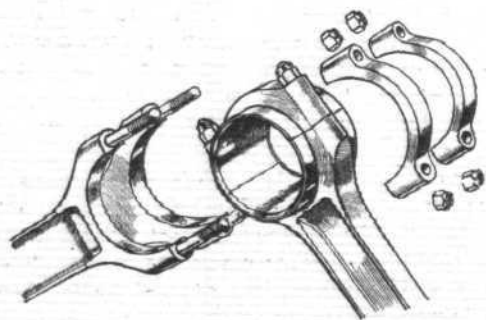
KNOwn as the 90 h.p. GAL-V/4, the new 90° Vee inverted four-cylinder air-cooled engine illustrated on this page should prove eminently suitable for use in small twin-engined light aircraft. It has been designed by Mr. A. H. Caple in collaboration with Mr. H. J. Stieger, managing director of General Aircraft, Ltd.

The cylinders have a bore of 100 mm. and stroke of 127 mm., giving a capacity of 3.99 litres. The normal power is 90 b.h.p. at 2,300 r.p.m. and the maximum power 100 b.h.p. at 2,600 r.p.m. The total weight is 190 lb., compression ratio 5.6 to 1, fuel consumption 0.6 pint per b.h.p./hr, and the oil consumption 1.0 pint per hour. The whole design has been made extremely robust, but,

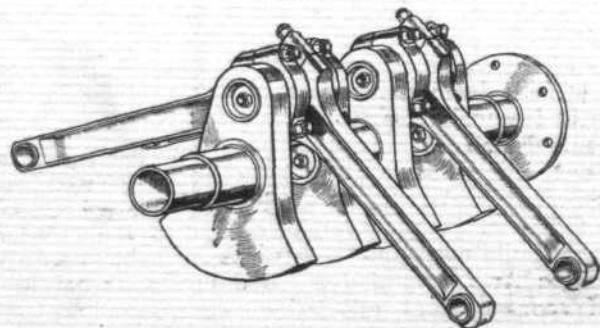
despite this, and also despite its small size, the power/weight ratio is only 1.9 lb./b.h.p. An integral electric starter will be fitted, as well as special drives for generators for lighting and wireless.

At the present time an engine is being flown for test purposes in a "Moth," and has already done over ten hours in the air. The first production engine is now being assembled, and it is hoped will be through its type tests shortly.

Although designed in the first place for Monospar aeroplanes, the GAL-V/4 should be admirable for many other aircraft. The inverted arrangement allows adequate ground clearance for the airscrew, and at the same time

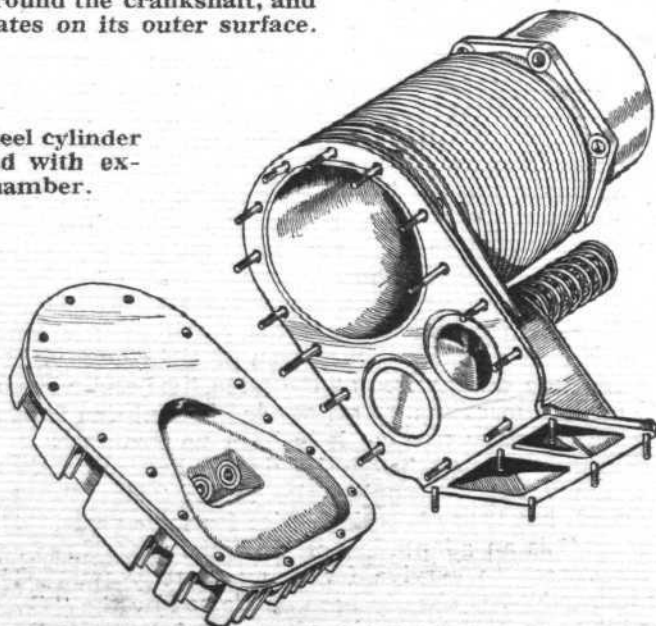


(Left) The white-metalled bush is clamped in the forked rod round the crankshaft, and the plain rod rotates on its outer surface.



Arrangement of one-piece crankshaft with flange for airscrew attachment.

(Right) The steel cylinder and alloy head with explosion chamber.



this design permits the pilot to see over the top with ease.

Details of the specification are as follows:—

Cylinders.—Steel barrels with aluminium-bronze valve chambers and aluminium alloy heads.

Valve Gear.—Side valves with concentric springs operated by a single camshaft through adjustable tappets.

Crankshaft.—Two-throw type with integral balance weights and large flange at front end for attachment of airscrew.

Crank Case.—In two parts, with joint on centre line of shaft; crankshaft supported on three bearings with a ball-thrust bearing, camshaft mounted on ball and roller bearings in lower half of crank case and driven by gears at rear end.

Connecting-rod.—One forked and one plain rod of Y-alloy stampings are fitted on each crank throw; a split big-end bearing with white-metalled inner surface is gripped in the forked rod, while the plain rod is free to rotate on the outside surface of the bearing.

Pistons.—Full-skirted "Specialloid," each with two plain and one scraper ring.

Ignition.—Two magnetos (B.T.H. or Scintilla) mounted on the rear cover and driven by worm gearing through vernier couplings. Automatic ignition advance on each magneto. Two sparking plugs (14 mm.) in each cylinder head and suitable arrangements are included for wireless screening.

Carburation.—A horizontal carburettor at rear of engine, petrol feed through two diaphragm pumps operated by eccentric on the extension of one oil pump spindle.

Oil System.—Two gear-type oil pumps on rear cover of engine, one feeding the main bearings, and through the hollow crankshaft to the big-end bearings, at 40 lb./sq. in. Filter included in circuit, and all oil passages machined in the case and rear cover to eliminate possibility of fractured pipes; scavenging pump withdraws oil from the crank case and returns it to an oil tank in the machine.

Starter.—Electric, operating on the rear end of the crankshaft.

Dynamo.—Drive fitted to rear cover.

Engine mounting.—Three "Silentblobs" fitted at rear end of crank case.

A MODERN DAY BOMBER

The "Hart," with 660 h.p. "Pegasus" IV Supercharged Engine : a top Speed of 197 m.p.h. with Full War Load

FEW military aeroplanes have met with such unqualified success as that enjoyed by the Hawker "Hart" two-seater. This aircraft first came into public notice during 1929 as one of the most promising of a number of high-performance Service machines designed to use the Rolls Royce "F" engine, or "Kestrel" as it was named subsequently. Fitted with the 480 h.p. "Kestrel" I.B. unsupercharged engine, the "Hart" was adopted by the Royal Air Force as a high-speed day bomber. Soon it became obvious that the machine's performance and handling qualities were such that it was fitted to perform a multitude of duties apart from day bombing, and accordingly it was developed into the "Osprey" Fleet Fighter Reconnaissance aircraft with "Kestrel" II MS, "Demon" two-seater fighter with "Kestrel" II S, "Audax" Army Co-operation machine, "Hart" (Communication), "Hart Trainer" and "Hardy" general purpose type—all four with "Kestrel" IB—and "Hind" high-altitude day bomber equipped with the new fully supercharged "Kestrel" V of 600 h.p., for which version a sensational performance is claimed.

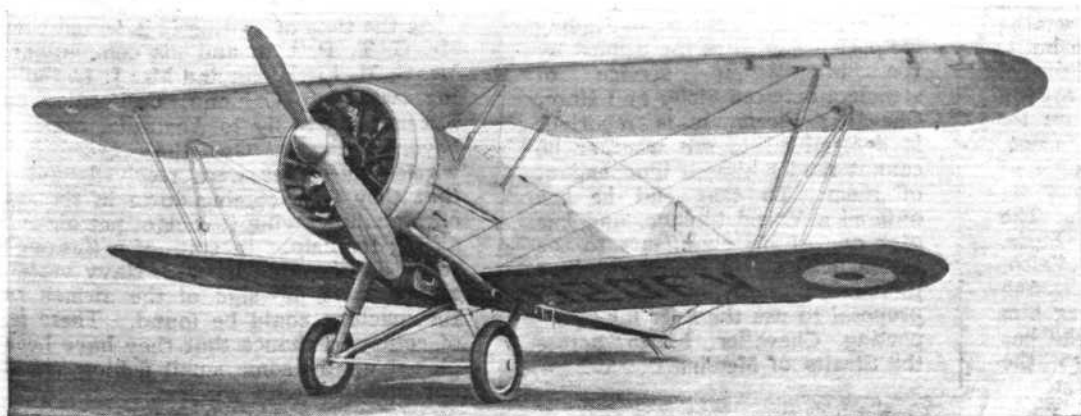
Following on the official adoption of the "Hart," and the proof, in service, of its qualities of performance and easy maintenance, a number of countries became interested in the type and its variations which, subsequently, were ordered in considerable numbers. Certain of these countries for various reasons, climatic and industrial, requested an air-cooled engine as the power plant of the machine, and, accordingly, the Bristol "Jupiter" and "Pegasus" radials were fitted, and gave eminently satisfactory results.

Early in 1934 a "Hart" was loaned by the Air Ministry and fitted with the 690 h.p. "Pegasus" III moderately supercharged engine—the first of the

"Pegasus" family designed to operate on the new Service fuel of 87 minimum octane value. The latest pattern combined exhaust collector and cowl ring was fitted. Flight trials at Filton aerodrome were outstandingly good, and the results of official tests at Martlesham Heath, which were made later, credited the machine with a top speed of 185.5 m.p.h. at 10,000 ft., which height was reached in five minutes four seconds with full war load. This excellent combination of aircraft and engine made its first public appearance in the New and Experimental Types Park at the Royal Air Force Display this year and was demonstrated at the S.B.A.C. Display a few days later. Loaded to a weight of 4,635 lb. the machine took off in 110 yards and had a service ceiling of 26,000 ft. The impressive take-off may be attributed to the high power given by the "Pegasus" III for take off, which is over 770 h.p.

Following on the successful tests of the "Pegasus" III version, a fully supercharged "Pegasus" IV engine normally rated at 660 h.p. at 11,500 ft. was installed. As was confidently expected, a very gratifying increase in performance was obtained, Martlesham figures showing that the "Hart" with this engine was capable of a speed of 197 m.p.h. at 13,400 ft. and a full load climb to 15,000 ft. in seven minutes eighteen seconds. The all up weight was the same as that of the "Pegasus" III engine version, the take off run being 134 yards and the service ceiling 29,800 ft.

These most excellent results were obtained, not in a "stripped" condition, but with the machine carrying full military load, including Vickers and Lewis guns, ammunition, two 250 lb. bombs slung beneath the wings, and fourteen gallons of fuel over and above that demanded by the standard specification.



FOR HIGH ALTITUDES :
The Hawker "Hart" fitted with the fully supercharged 9-cyl. Bristol "Pegasus" IV, rated at 660 h.p. at 11,500 ft.

THE FOUR WINDS

ITEMS OF INTEREST FROM ALL QUARTERS



VICEREGAL: The *Star of India*, an Avro 642 (four "Lynx IVc") for the Viceroy of India. It travels over 600 miles at 130 m.p.h., with six passengers and four crew. The seating and interior decoration are particularly luxurious. The twin-engined Avro 642 was described in "Flight" for April 5. (Flight Photo.)

Mrs. Bruce to Try Again

Mrs. Bruce's Autogiro, which was damaged in France during her attempt to fly to the Cape, arrived in England last Saturday for repairs. Mrs. Bruce stated that she hoped to start on a second attempt next week.

Wiley Post Claims a Record

The American airman, Wiley Post, has been busy attempting to beat the world's altitude record of 47,590ft. (held by the Italian Renato Donati) in his Lockheed "Vega," *Winnie Mae*. On December 3 he made a two-hour flight from Bartlesville, Oklahoma, landing at Muskogee, ninety miles away. He believed he improved upon the record, but on another flight from Bartlesville on December 7 he claims to have reached an altitude of 50,000ft.

Avro 642 for Lord Willingdon

When Lady Willingdon was at the S.B.A.C. display at Hendon on July 2 it was decided that a four-engined version of the Avro 642 should be built for the personal use of the Viceroy of India, Lord Willingdon. In the intervening five months this machine has been built, and we were afforded an opportunity of flying in it and inspecting it at Croydon last Sunday, prior to its departure for India, piloted by Mr. Neville Vincent, on Tuesday. Mr. Vincent is manager of the Air Mail Services operated in India by the firm of Tata's Sons, Ltd. The route he is following is London, Paris, Marseilles, Rome, Brindisi, Athens, Cairo, and thence by the normal route through Baghdad to India. Accompanying him will be Flt. Lt. J. C. Johnson, who has been appointed aide-de-camp to the Viceroy.

R.A.F. Royal Wedding Gift

A pair of Queen Anne walnut chests and a pair of mahogany hall seats, subscribed for by all ranks of the Royal Air Force, have been presented as a wedding gift to H.R.H. The Duke of Kent.

High Flying in Italy

Several members of the high altitude section of the Italian Air Force have been making experimental altitude flights from Montecelio aerodrome recently. Three claim to have reached heights of 35,000ft.

A Hackneyed Offence

Mr. Laurence Lipton has just been fined for "unlawfully landing an aeroplane on Hackney Marshes." If we remember rightly, it was in 1909 that the police were somewhat perturbed over the activities of a certain A. V. Roe on Lea Marshes. Has the P.C. changed his beat?

Twenty-five Years Ago

From "Flight" of December 11, 1909.

"Aeroplane Ferries.—Finding his patience tried to the utmost by the intermittent service of steamers between Sicily and Italy, Chevalier Florio, it is reported, is determined to see whether he cannot render himself independent of them. To that end he has ordered a Voisin biplane, and has sent one of his chauffeurs to the works in Paris to be taught how to manipulate it, in view of the proposal to use the flyer for transporting Chevalier Florio across the Straits of Messina."

Caproni Fighters for Peru

Twelve Caproni 114 fighters of the type illustrated in *Flight* of August 14 this year are being built for the Peruvian Government. Bristol "Mercury" engines are fitted, giving a climb to 19,700 feet in 8 min. 30 sec.

An Air-minded Farm-hand

Clarence Buckenberg, a farm-hand, of Sioux Falls, S. Dakota, has not only built a small high-wing monoplane (fitted with a V.8 air-cooled automobile engine), but has learnt to fly it, and uses it to take him to his daily work.

Foreign Aircraft in China

According to a report in a Shanghai paper, two hundred aeroplanes have been imported into China from abroad since last August. Of these 110 were purchased in the U.S.A., forty in France, and fifty in Italy. Included in the latter order were twenty bombers, ten fighters, ten reconnaissance and ten training machines.

The Pacific Flight

At the time of writing it is feared that Mr. C. T. P. Ulm and his companions, Mr. G. M. Littlejohn and Mr. J. L. Skilling, who left Oakland, California, on December 3 to fly to Australia, are lost beyond hope. On the next day wireless messages were received saying that they were coming down in the sea off Honolulu owing to lack of petrol, and asking for help. In spite of a thorough seven days' search by U.S. Navy vessels and aircraft, no sign of the airmen or the machine could be found. There is, of course, a chance that they have been picked up by some small fishing vessel not equipped with wireless.

THE GATEWAY *to the* EAST

Part II — From Rome to Sirte: The Air Journey to Baghdad Continued

By C. N. COLSON.

OUR next stage led us down the coast to Rome—a flight which is interesting, as it passes Elba and other places known to us from history, but wherever possible we cut across the bays to save time, and so were frequently almost out of sight of the land. The wind blowing off the coastal mountains made it very bumpy indeed, and, therefore, quite a tiring trip; but Bear was already becoming acclimatised, and I believe he did not feel any ill-effects during the whole of the rest of the journey—which shows how quickly people get used to flying.

At Rome we landed at the Littorio aerodrome, situated north of the city in a bend of the River Tiber. It is well made, and, although not very large, was of ample size for us. From its position it would appear liable to flooding, and this seemed to have been anticipated by building the hangar about twenty feet above the aerodrome, on concrete piles. This is rather exciting at first, as you have to taxi up a concrete ramp to the entrance, but the usual large gang of men seemed quite used to it and held on to the wings in the right places without doing any damage.

Try as we might, we could not hurry the many officials who wanted to examine, at great length, our log book, *carnet de passage en douane*, certificate of airworthiness, and so on. No one in Italy seems to believe that anyone who is flying can possibly be in a hurry. They assume that you must be having a holiday, and that a day more or less does not matter at all. Another source of delay here was the fact that the fuel supplied by the aerodrome pumps is Stanavo, whereas we, as I mentioned last week, carried a *carnet* for Shell. The latter fuel is obtainable, but in a much less convenient manner than usual; you have to telephone to Rome and have your Shell brought all the way out by lorry, and the day we wanted it the lorry went and ran a bearing, or something equally annoying. However, the fuel came at last and was put in very quickly, but, nevertheless, nearly two hours had gone by the time we took off and were on our way over that ancient city, which looks so new in places because many of the historic buildings have been opened up under the Mussolini regime. He has had numberless small hovels and decrepit houses cleared away, and a visitor to Rome who has not been there for ten years would not recognise certain parts of the city, but he would agree that it was improved.

The coast south of Rome is flat and uninteresting, and when we reached the Gulf of Gaeta we cut straight across it to Naples. We had to land there because our range would not allow us to go direct from Rome to Catania, which was to be our night stop if we could possibly make it. There are several aerodromes all down the "instep" of Italy south of Naples which could be used in emer-



J. K. Morton, the "Dragon's" pilot, satisfying the Egyptian customs officials at Mersa Matruh.

gency, but they are not supposed to be used by ordinary tourists.

Naples aerodrome, which lies north of the city, is neither large nor has it good approaches. High trees surround it and the surface is rough. As luck would have it, we had to land and take-off across the narrow width, but we did so without undue trouble. Once again we found the rigmarole which had to be gone through with the log book, and so forth, very tedious, and, as at the other

Italian aerodromes, although we were neither leaving nor coming into Italian territory, all our passports had to be examined minutely and the seals on our cameras scrutinised to see that we had not been tampering with them!

One point which is bad about the Italian aerodromes—and which generally applies, but to a lesser extent, to most foreign aerodromes—is that the wind direction indicator is difficult to see. They have an attenuated wind stocking with narrow red and white bands, which make it look far too like the surrounding house-tops. There is also a large wooden arrow placed hori-

zontally on the ground, but the designer has been parsimonious with the dimensions of the barbs, so that, at times, it is quite difficult to see which is the head and which is the tail.

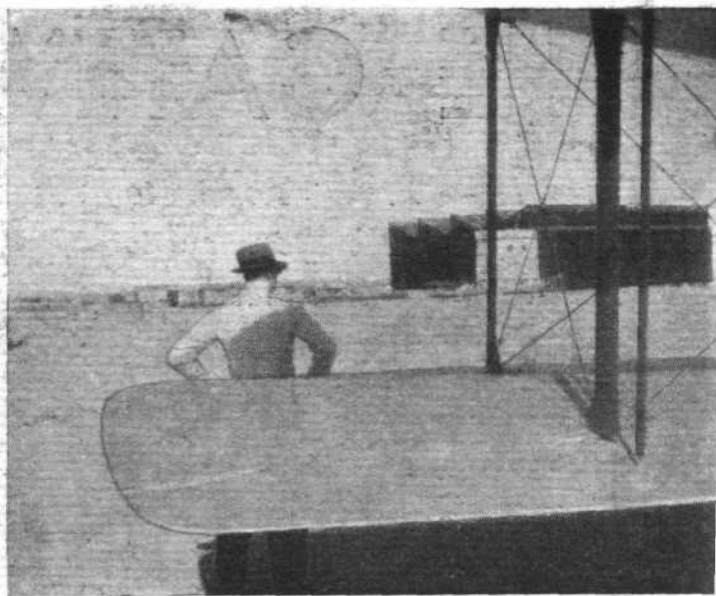
At Naples we first began to feel the advantage of Mr. Mackinnon's connection with Lloyd's—he being an underwriter of that august body—as the Lloyd's agent very kindly met us and assisted materially in getting us through the paper-signing business quickly.

His help did not, however, completely overcome the fatherly attitude adopted towards all pilots flying through Italy. They are never allowed to go without endless trouble unless the weather report shows that a clear sky without a trace of wind is the general condition. When we wanted to leave, the report showed a considerable and gusty wind, and there were also a few clouds about. It wasn't bad weather, from an English pilot's point of view; in fact, comparing it with the sort of weather to

This is the second instalment of an article by Lieut.-Com. Colson, R.N., describing the recent journey which he made on behalf of "Flight" to investigate the conditions that the ordinary pilot is likely to encounter on a long-distance flight of this description.



One side of that masterpiece of engineering, the Nile Barage, which controls the irrigation of the Delta country and prevents famine in Egypt.



The new hangar for civil aircraft, erected at Almaza, Cairo, by the Egyptian Government, as so many aeroplanes are now passing through.

which we are accustomed it was really a good day. However, the Italian authorities thought it was too gusty, and it took a great deal of arguing before they would give us the report. They only did so after we had signed a chit exonerating them from all responsibility in connection with our flight! It is really rather funny, and their insistence is a tacit admission that they assume responsibility if you don't sign this "blood chit"!

When we got off we found the conditions a little bumpy, but not enough to detract from the pleasure of seeing Vesuvius towering up to the south nearly four thousand feet above the city. It seems impossible that people actually live contentedly on the very slopes of that smoking mass of lava. Yet they do—Lloyd's agent does! He says it's very nice, and "after all, we get quite a good warning before a serious eruption is going to occur"! It reminded me of a yarn my mother tells me of a time when I was only a baby and she and my father went up those same slopes. Apparently in those days seismographs were not so good as they now are, because when their party was getting near the crater an eruption suddenly began, and in a few minutes they were running down again under a rain of red-hot cinders. It could not have been very pleasant, but they were laughing so much at the spectacle of a "brave" American who snatched an umbrella from one of the women in his party in order to protect his own head that they rather forgot the danger.

One point upon which I might have said more is the charges made on Italian aerodromes. At Pisa we paid 28 lire, nearly ten shillings, for landing, 28 lire for housing, 7.75 lire for customs clearance, and another 28 lire for taking-off the next morning. The last is the sort of charge which makes the Englishman's gorge rise, although it is true that they make you pay only half of it if you take-off the same day as you land. At Rome we got away rather more cheaply, paying only 13.90 lire for landing and 6.95 for taking-off. Naples and Catania, our next stop, were the same as Pisa.

Leaving Vesuvius behind, we passed over the point of land running out to the island of Capri, which, despite its much-sung beauty, looked rather uninteresting from the air. We set our course straight across the Gulf of Salerno to Licosa Point, because, though this meant going something like twenty-five miles out to sea, we knew that we had to save time to get into Catania before dark.

When we got to Palinuro, the next cape, the thought of saving time made us braver still, although by then we were so used to trusting our "Gipsy" engines that there wasn't any real cause to harbour the self-satisfying thought that we were being brave; so we decided against following

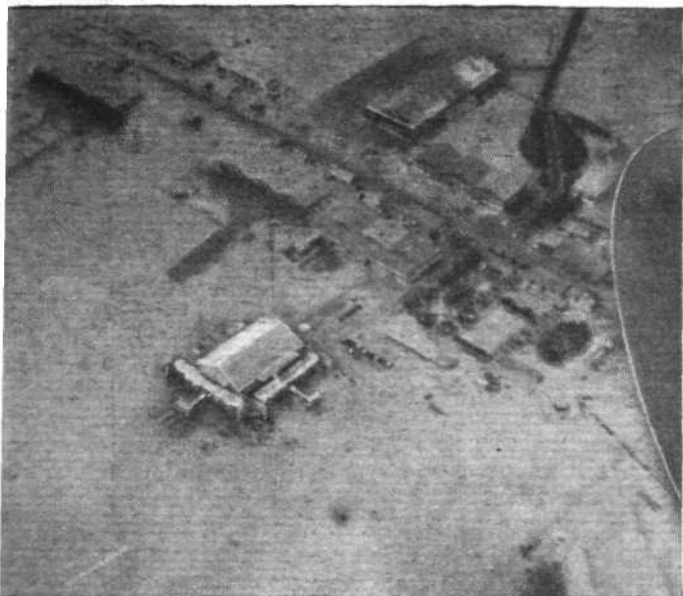
the coast all the way round the "instep" of Italy and laid our course direct for Stromboli and Catania. The volcano forms a magnificent landmark, and we saw it clearly from about 120 miles away.

The bad weather we had been promised did not mature, and, in fact, we were then cruising along at some 5,000 feet above the water in a cloudless sky, enjoying the sun for which we had longed as we flew down through France. The coast beyond Stromboli began, however, to cloud up as we got nearer, though luckily Cape Milazzo juts out its narrow neck in a way which makes it unmistakable, so that we had a perfect check for our position. Actually, when we got there we were very glad of that check because the clouds got lower and it seemed as if Etna, away up above, was annoyed with us for trying to race the sunset and get in before dark. We had hoped to fly straight over Sicily a little way east of that mountain, but from its crater to its base it was buried in majestic clouds so that we could not tell exactly where it was. That meant that we had to turn east and go nearly up to the Straits of Messina before we could turn, as the Straits are a prohibited area and aircraft have, perforce, to go through a narrow "corridor."

In the Dusk

Once over, we scurried down the Sicilian coast in the fast-darkening, cloudy atmosphere; darker than it might otherwise have been owing to the clouds over Etna shutting out the last rays of the setting sun. We arrived over Catania some twenty minutes after the sun had set, and just as the sporting Commandant was deciding to get several cars to shine their head lights on to the aerodrome as landing lights for us. He had been told, of course, that we were on our way, and was somewhat relieved when we arrived. Of all the aerodrome officials we met, none went to such lengths to do everything he could for us as did that Commandant. We saw quite a lot of him, as we were not able to get away the next day. He entertained us at the officers' mess, and, that evening, even got volunteer mechanics to help Gatrell while he did the twenty-five-hour overhaul of both the engines.

We stayed that night at the Grand Hotel Centrale. It was rather "grand," though not unreasonably expensive, and certainly comfortable, but the taxi drive into the town is long and costs a lot, so we were glad that there were six of us to share it. It is some sixteen years since I was last in Catania, and I expected to see great changes, like those I was to see in Rome on my way home, but Fascism here does not seem to have gone in for anything very spectacular. They are opening up some of the buried



Imperial Airways H.P. 42's, too large for the Heliopolis aerodrome hangars at Cairo, produce "Mother and little pigs" effect.



Looking down on the Citadel and Mohammed Ali mosque, with the Makattam Hills behind; these stand above and dominate Cairo.

evidences of past architectural glory, but, on the whole, the town is still just one of those delightful Mediterranean places to which you only want to go when your haven't any work to do.

Catania aerodrome is only flat lava and mud, and therefore apt to become very soft after rain, especially the sort of rain they get there under the shadow of Etna. That volcano is a grand sight, and its slopes produce grapes for excellent wine, but it does make the weather somewhat unsettled. It is always advisable, therefore, to ascertain from Naples or Rome that the aerodrome is usable, although Palermo, I believe, is generally all right when Catania is too soft. Catania is quite large, and there are excellent hangars into which dozens of interested products of Mussolini's work-for-all system helped to push our "Dragon." There is no night-lighting equipment yet, but I understood that it is likely to materialise soon.

We asked the Commandant to dinner that night, and, while talking over our plans, we had the idea of saving time by flying over Malta to Tripoli instead of going round by Tunis. We found that the direct course from Catania to Tripoli goes straight over Malta, which lies only fifty miles south of Sicily, so it would be easy to find even if the weather were thick. The coast at Tripoli is flat, but man (or Providence?) has arranged that a railway runs east from the town and only a road runs west. This, we felt, would make it easy to decide which side we were on when we reached the coast. Our chief concern was the range of our "Dragon." The absolute maximum, with our load, was a little over four hours, so, for safety's sake, we could not rely on much more than three and three-quarter hours. Flying at about 5,000 feet this gave a range in still air of only about 350 miles. The distance from Malta to Tripoli is about 220 miles, and from Catania to Malta 100 miles, so, if the wind was against us, we should have to land at Malta. Moreover, we had to remember that Malta might be covered in thick mist, and that, if we were forced to turn back when between there and Tripoli, we should have the wind against us if we had started with it behind us; so we had to work out a position beyond which we should have to go on whatever happened, as we shouldn't be able to reach Catania even if we wanted to go back. It was rather frightening, looked at like that, but, if taken carefully with due attention to the weather, there was really nothing in it with a twin-engined machine.

Well, we learnt that the Italians flying between Sicily and Libia make that trip as a matter of course, even in single-engined machines, so, with our two "Gipsy Majors" we had no reason to be apprehensive.

Next day the weather was foul. We couldn't think of leaving Catania, either for Malta or Tunis. We waited about on the aerodrome, after having been out there by 7 a.m., until midday, and only those who have kicked their heels on aerodromes know how tiring that can be. After a magnificent lunch in the officers' mess with the Commandant—whereat some members of the party made their first essay to eat spaghetti without cutting it up into little pieces—we eventually got weather reports from Tripoli, but nothing from Malta, as the atmospherics were too bad for wireless reception. It looked fairly hopeful, and so, although clouds were forming on the hills south of Catania, we thought we would have a shot at reaching Malta that night. However, those hills beat us, and, not wishing to fertilise the olive trees with our bodies, we turned back to Catania while there was time.

Onward to Malta

Next morning things were much more cheerful, and we were determined to get farther on our way despite the attraction of the wonderful hospitality shown us by the Commandant and his staff. We got our weather reports early, and were off by 8 a.m. A good breeze behind us helped a lot, and in under the hour we were over Malta. I used to live there prior to 1905 and had revisited it during the war, so I knew something of its attraction; but never until that gloriously sunny morning had I realised its true beauty. It irked me to have to carry on straight over it, but we thought it wisest to take advantage of the following wind and make Tripoli if we could. Whether it was my longing to land there again, if only for a short stay, or whether it was just the cussedness of the elements, I don't know, but as things turned out we were back again over Hal Far aerodrome at 10.30 a.m., cursing because we had been unable to get through, and feeling none the less pleased to be told that they had thought we did not like the look of the aerodrome and that was why we hadn't landed when we passed over earlier in the morning!

Actually it was weather which beat us—real terrific weather, as black as soot with thunder clouds almost down on to the water and with no gaps in them. When we passed over first time the sky was clear, H.M.S. *Furious*, the aircraft carrier, was outside the harbour with some Fleet Air Arm aircraft flying round her, and things looked good. But they rapidly changed, and after about seventy miles we decided it wasn't good enough, so back we came.

Wing-Com. R. Marix, the C.O. at Hal Far, kindly invited us up to the mess and gave us lunch. That mess is

not many years old—but what a change from the huts I remember at Calafra during the War!

the seaplane base nearby, and decided to make another

We had a long talk with the met. officer at Calafra, try after lunch. However, it wasn't any good, and we only got about sixty-five miles that time. Getting back again wasn't as easy as it might have been; the Goudime calculator was of enormous help, but our main trouble was, naturally, the wind. Had we flown at a few hundred feet it would have been easy to judge our drift, but at 5,000 feet, which we maintained for the sake of safety in case an engine packed up, it was largely a matter of guessing. For work of this kind we ought to have had a drift sight, but as it was I had to estimate the drift, from my knowledge of what the wind usually does at various heights and what our weather reports said it might be doing. Not a perfect method, but it worked, and, despite rotten visibility, we found the island without any difficulty.

That night we decided that we couldn't afford to lose any more time at all, and that we really had to get down to it if we were going to get to Baghdad in time. We renewed our acquaintance with the Union Club and met many old friends, but, what was most important, made arrangements to get weather reports from Tripoli as early as possible; so we left the comfort of the Great Britain Hotel early and got to Hal Far by 9 a.m. next day.

I must say a word about the helpfulness of everyone at the aerodrome. The duty officers and airmen did all they could to help us, the customs official came out quite soon, although he has to be sent for, and the Shell agent brought his lorry up in reasonable time. The fees are the standard Air Ministry charges—12s. 6d. landing fee and 4s. for housing.

Hal Far is not very large, and, as it was fairly hot, we took off "by numbers," but without any difficulty.

Soon Malta had faded into the blue of the Mediterranean behind us and we had settled down more comfortably, because the weather really did look like giving us a "break" this time. We got a good check on the island of Lampedusa because the visibility was so good that we saw it a hundred miles away on our starboard side. So, having flown through two and a half hours' of sunshine, and after numerous false alarms, we did at last see the African coast. Even Gatrell, whose confidence in his engines let him sleep most of the time, woke up and began to take an interest in things. I had made a small correction to our course when we were about half way over, as it seemed that the wind was carrying us more to the west than I had allowed for; had I not made this we should have hit Tripoli dead ahead, but, as it was, we arrived about five miles to the east.

Arrival in Africa

Our reception there was great. It was our first taste of Italian efficiency outside Italy and we found it good. They get things done quietly and quickly without so much arm-raising as in Europe, and are much more interested in you personally. You have the advantage, too, that you have just come from their native land, and no Italian seems to like being away from it; so he is kindly to you and wants to know what you think of the state of the country and the improvements Mussolini has made. They are nothing if not patriotic.

We still had our cameras sealed as, against our real desires, we had not opened them in Malta because we did not want to risk delays on arriving at Italian territory again. The Shell manager was waiting, as we had cabled from Malta and the Commandant had been warned of our coming by his Air Ministry—General Balbo had hoped to see us the day before this but had been unable to wait until our arrival—and the customs clearance people were all waiting to help us through quickly. Here Jones took on the job of keeping us supplied with food, so he bought a good supply to give us our midday meal in the air and thus avoid wasting time for it on the ground. He looked after that essential provision for the rest of the trip and

always produced something whenever anyone was hungry.

The aerodrome is a little bit tricky and inclined to be very soft after rain. There is plenty of room for landing along the longest run, but the other way is a bit short for a machine like ours. It is easy to find as there are great white pyramidal heaps of salt by an evaporation plant on the east side. Bad patches are usually marked with red flags. One innovation which gladdened our hearts—or at least that of Mackinnon—was the absence of landing fees or other charges throughout Libia. At no Italian North African aerodrome did we have to pay anything.

After a stay of only forty-five minutes we were ready to go, so off we went to Sirte, about 240 miles further east. Our A.A. directions said that this was not a recommended place for stopping the night as there was no accommodation, but we felt that we must risk that in order to make up some lost time. There was nowhere else we could stay between there and Tripoli, so Sirte it had to be.

I have not referred to the A.A. before—a rather serious omission, because, without their help (or at least the help from the touring organisation in which they and the Royal Aero Club collaborate) a trip like this would be a very much more difficult undertaking. They supply maps of the route in strip form and provide the latest information about everything, but, although they are so good, they were not quite up to date about Sirte. Our fears that the members of the party who had never yet been east of Marseilles were going to get their first taste of bugs and many other kinds of insects in some Arab café that night proved unfounded. The Italian authorities are pouring money into this part of Africa, and we had our first evidence of it at Sirte. There they have recently erected a small municipal hotel, the Albergo Municipal, right on the side of the desert aerodrome.

A Desert Aerodrome

From Tripoli to Sirte is not quite so uninteresting as the desert can be, but very nearly. We flew a direct course, which led us down the coast to where it bends south by Misrata, and then took us straight across a large chunk of the Bay of Sirte, so we didn't really see much desert; however, there was plenty more to come.

Sirte Aerodrome, our first landing ground which was simply a flattened portion of the desert, was a real pleasure to land on after those European ones which are surrounded by high trees and buildings. It is well equipped with wireless, and the operator talks English. He is extremely helpful and very keen to be of any assistance he can to pilots who, like ourselves, were not very strong on the Italian language. The hotel is quite well appointed, and, like most Continental hotels—for it is run by an Italian—can produce good meals at very short notice. This being our first night stop in the desert—and, for that matter, the first time that most of the party had seen the desert at close quarters—we went for a walk round the village before our supper was ready. As in most Arab villages, the low, white houses, mostly consisting of only one or two rooms, are close up against each other and filled to their capacity with a varied collection of old men, young boys with rickety-looking legs, and old women. Young men and women are seldom to be seen in these villages. The houses are mostly of white-washed mud, with flat tops; and the roads, such as they are, run right up to the outer walls, so that the doors open straight out on to them.

Sirte, being an Italian Air Force station, boasts of several large, well-kept, and comfortable-looking buildings which house the officers and men, and from the air it looks quite important. A closer inspection shows that little of real interest exists in the village, which does only a very small trade with the interior. As at most desert aerodromes dogs abound, and every Italian officer throughout this part of the world seems to keep one of a different breed; the result is far more amusing than the proverbial fifty-seven varieties of Mr. Heinz.

(To be continued next week.)

THE ROYAL AIR FORCE

Service Notes and News



Air Ministry Announcements

"THE KING'S MEDAL"

The Air Ministry announces that His Majesty the King has been graciously pleased to signify his intention of awarding a prize each half-year to the flight cadet at the Royal Air Force College, Cranwell, who at the passing out examination obtains the highest aggregate marks in all subjects. The prize, which will be in the form of a medal—to be known as "The King's Medal"—will be first awarded in July, 1935.

NO. 230 (F.B.) SQUADRON

The new unit, No. 230 (Flying Boat) Squadron, which commenced to form at Pembroke Dock on December 1, will eventually be equipped with Short "Singapore III" boats, each driven by four Rolls-Royce "Kestrels."

NEW AIR ATTACHÉS

Sqd. Ldr. R. W. Chappell, M.C., has been appointed Air Attaché at Tokyo, and left England on November 23 to take up his new duties. He has been granted acting rank as Wing Commander.

This is the first appointment of an Air Attaché to the Japanese capital. Wing. Com. Chappell passed in Japanese in 1927, and requalified as a first-class interpreter last year. He was seconded for duty with the Japanese Navy in 1930-31.

Sqd. Ldr. A. C. Collier has been appointed as the first British Air Attaché in Russia since the Bolshevik revolution.

AIR FORCE LIST

The December issue of the *Air Force List* has now been published. It can be purchased (price 2s. 6d.) from H.M. Stationery Office at the following addresses: Adastral House, Kingsway, London, W.C.2; 120, George Street, Edinburgh; 2, York Street, Manchester; 1, St. Andrew's Crescent, Cardiff; 15, Donegall Square, Belfast; or through any bookseller.

ACTIVITY AT SINGAPORE

The aircraft carrier *Eagle* and the destroyers *Veteran* and *Witch* are now at Singapore, and some twenty other warships of the China station are also assembling there. Combined air and naval exercises have been arranged. The R.A.F. units at Singapore are No. 20 (F.B.) Squadron ("Southampton"), No. 36 (Torpedo-Bomber) Squadron ("Horsley"), and No. 100 (B.) Squadron ("Vildebeest"). A flight of four "Wapitis" of No. 1 (Indian) Wing is also due at Singapore. This Wing is stationed at Kohat in the N.W. Frontier Province, and comprises Nos. 27 and 60 (B.) Squadrons. Next January No. 11 (B.) Squadron from Risalpur will fly its twelve "Harts" in formation to Singapore, and will be accompanied by a "Victoria" to carry the squadron's baggage. Thus is Singapore kept in touch with China on the one hand and India on the other.

CENTRAL FLYING SCHOOL

The undermentioned officers and airman pilots who attended the Flying Instructors' Course at the Central Flying School from July 23, 1934, to October 20, 1934, have been categorised as follows:—

A.2.—F/O's W. H. Kyle, D. G. Morris, J. Whitehead, R. L. Wilkinson, and Sgt. Marsden, B. J.

B.—F/O's R. G. C. Arnold, W. N. H. Banks, H. P. Broad, H. A. V. Hogan, I. V. Hue-Williams, C. S. Moore, J. W. C. More, N. E. Morrison, G. E. B. Nixon, M. W. S. Robinson, and F. C. Seavill; Serjts. Bannister, S. W., Bastin, S. C., Burke, R. G., Griffiths, W. N. C., Hart, J., Hellyer, C. W., Hickman, A. A. F., Stafford, R. C., D.F.M., Staples, A. P., Westley, F. W.

C.—F/O's E. J. P. Davy, R. G. Harman, U. Y. Shannon, and Serjt. Buchannan, W. G.

The undermentioned officers have been recategorised from "C" to "B":—F/O's H. R. A. Edwards and T. J. MacDermot.

ROYAL TOURNAMENT, 1935

The Royal Tournament for 1935 will be held at Olympia, West Kensington, London, W.14, from Thursday, May 9, to Saturday, May 25, inclusive.

No. 6 (B.) SQUADRON DINNER

The "coming of age" dinner of No. 6 Squadron, Royal Air Force, will be held at the Mayfair Hotel, Berkeley Square, London, W.1, on Friday, February 1, 1935, by the past and present officers of the Squadron. Further information can be obtained from the Organising Secretary (Wing Com. C. H. Keith), Room 707, Air Ministry, Kingsway, W.C.2.

No. 6 Squadron was formed on January 31, 1914, at South Farnborough, and proceeded on service to France in October of that year. Air "spotting" for Artillery Co-operation was initiated in this squadron, which served throughout the war, from many different aerodromes in France. It earned the distinction of having one of its officers decorated with the first Victoria Cross awarded for air fighting, and it shares with one other squadron the honour of having been mentioned, as a complete squadron, in despatches.

In May, 1919, when the majority of squadrons were being reduced to cadre strength, No. 6 was ordered to Iraq for continued service, and in August of that year again started active operations from Tanooma, near Basra. No. 6 is the only one of the original squadrons, formed before the 1914-18 war, which has never even temporarily been reduced to cadre strength. After slightly over ten years' varied service in Iraq, the squadron was, in October, 1929, moved to its present station at Ismailia, on the Suez Canal—the move across the desert having been undertaken as a military operation. Arrived at its new station, the squadron was at once called into action in Palestine, in connection with internal disorders between the Jews and Arabs. One flight, from Ismailia, is now maintained at Ramleh station, in Palestine.

The Squadron was formed by Captain J. H. W. Becke (now retired as Hon. Brigadier General, C.M.G., D.S.O., A.F.C.), and is at present commanded by Squadron Leader H. M. Massey, M.C., p.s.a.

LONG SERVICE AND GOOD CONDUCT MEDALS

The Long Service and Good Conduct Medal has been awarded to the undermentioned airmen:—W.O.'s Chainey, G. E., Chambers, A., Daniels, A. W.; W.O.2's Rutherford, A.D., D.F.M., Hayward, C. F., and Simpson, W. J.; F/Sgts. Angelo, G. G., Banks, F., Barleycorn, J. F., Bennett, W. A., Boswell, E., Bottomley, G., Cawthorne, L., D.C.M., M.M., Corke, E. C., Cresswell, G., Denley, J., East, A. A., Goldstone, G. J., Jarmin, J., Justice, A., Pack, A. T., Prout, G. H., Rae, J. P., Smith, J., Urquhart, B., White, E. C., and York, W. H.; Sgts. Baldwin, G., Clarke, F. D., Goundry, T. H., Haggis, J. E., Hunt, H. J., Killock, W. T., Long, P. W., M.M., Martin, H., McLeod, A. N., and Murphy, P. E.; Corpls. Appleby, F., Dooner, P., Fox, J., Hardie, T., Judd, W. G., Lawrence, T., McCarthy, D. C., Paisley, R. O., Richardson, R., Scott, W. J., Stockwell, R. W., and Sutton, A.; L.A.C. Day, W.

SELECTION OF AIRMEN FOR TRADE TRAINING

The selection of aircrafthands for training in the following trades will in future take place when they have completed between 10 and 18 months' service from the date of enlistment. Aircrafthands with more than 18 months' service on January 1, 1935, will, however, be given a final chance of selection for training in a group V trade, provided that they have not completed 5 years' service on that date.

<i>Group III trades.</i>	Cook and butcher. Fabric worker. Motor boat crew. Storekeeper. Hydrogen worker.
<i>Group V trades.</i>	Driver (petrol). Mate. Service police. Physical training instructor.

COMMITTEE OF UNION JACK CLUB

The R.A.F. representatives on the committee of the Union Jack Club are:—Warrant Officer T. A. Hanson, Uxbridge, and Corporal P. E. Peddie, Record Office, Ruislip.

TRADE PROFICIENCY OF NON-COMMISSIONED OFFICERS

Assessments of the trade proficiency of all non-commissioned officers are in future to be made under three headings, corresponding generally with the factors considered for re-engagement purposes. The headings will be as follows:—

- A.—(i) Skilled as tradesman.
- (ii) Proficiency as pilot, air gunner (full-time) or air observer, if so mustered.
- B.—Ability as technical N.C.O., i.e., as foreman in trade.
- C.—Administrative ability as N.C.O.

The terms "tradesman," "technical," etc., are used in a broad sense, and cover clerks, aircrafthands, etc., as well as airmen whose employment is in the narrow sense technical.

Since the new method provides for independent assessments in respect of ability in trade and ability in rank, the rules as regards the award of "superior" and "satisfactory" stated in the last two sentences of clause 4 of para. 2141, K.R. & A.C.I., will no longer apply to assessments.

ROYAL AIR FORCE GAZETTE

London Gazette, December 4, 1934
General Duties Branch

The following Flight Lieutenants are promoted to the rank of Squadron Leader (Dec. 1):—W. E. G. Mann, D.F.C., C. H. Potts, D.S.M., E. F. Waring, D.F.C., H. J. Saker, J. F. T. Barrett, D.S.O., D.F.C., T. C. Traill, D.F.C.

The following Pilot Officers are promoted to the rank of Flying Officer:—R. T. Smith, A. Golding (July 10); A. H. Fear (Sept. 1); G. D. M. Blackwood (Oct. 25).

Flt. Lt. W. A. Duncan is placed on the retired list (Dec. 4); F/O. M. F. Summers is transferred to the Reserve, class A (Nov. 27).

The short service commissions of the following Acting Pilot Officers on probation are terminated on cessation of duty:—W. O. Pridham, D. G. Scott (Nov. 29); B. S. Francis, R. P. Russ, T. B. Yule (Dec. 1).

Accountant Branch

Flt. Lt. O. K. Griffin is promoted to the rank of Squadron Leader (Dec. 1).

Chaplains Branch

The Rev. R. M. Bankes-Jones, M.A., is placed on the retired list (Dec. 3).

ROYAL AIR FORCE RESERVE

Reserve of Air Force Officers
General Duties Branch

P/O. C. F. H. Shepherd is promoted to the rank of Flying Officer (Sept. 20).

The following Flight Lieutenants are transferred from class A to class C:—R. S. Higgins (Oct. 15); L. G. Gray (Nov. 28); H. W. Allen (Dec. 3).

F/O. J. A. Hankins is transferred from class C to class A (Oct. 23).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Air Commodore.—A. D. Cunningham, C.B.E., to Headquarters, Air Defence of Great Britain, Uxbridge, 20.11.34. For duty as Senior Air Staff Officer, vice Air Com. E. L. Gossage, D.S.O., M.C.

Group Captain.—H. J. F. Hunter, M.C., to Aircraft Depot, Iraq, Hinaidi, 11.11.34. To command vice Grp. Capt. J. McCrae, M.B.E.

Wing Commanders.—J. P. Coleman, A.F.C., to D. of O., Dept. of Chief of the Air Staff, Air Ministry, 2.12.34, vice Wing Com. C. C. Darley, C.B.E. A.M. F. W. Trott, O.B.E., M.C., to Air Armament School, Eastchurch, 26.11.34. For Administrative duties vice Wing Com. G. C. Bailey, D.S.O.

Squadron Leaders.—E. R. Openshaw, A.F.C., to Air Armament School, Eastchurch, 15.11.34. For Armament duties in Armament Training Camps Section. R. M. Trevethan, M.C., to Home Aircraft Depot, Henlow, 29.11.34. For flying duties vice Sqd. Ldr. R. J. Sanceau.

Flight Lieutenants.—H. J. Pringle, to No. 3 (F) Squadron, Kenley, 21.11.34. G. R. Beamish, to No. 45 (B) Squadron, Helwan, Egypt, 12.11.34. C. M. Champion de Crespigny, to Station Headquarters, Worthy Down, 1.11.34. T. G. Pike, to No. 4 Flying Training School, Abu Sueir, Egypt, 13.11.34. C. H. Tighe, to No. 6 (B) Squadron, Ismailia, Egypt, 16.11.34. H. G. Richards, to No. 502 (Ulster) (B) Squadron, Aldergrove, 2.12.34. C. Guppy, to No. 40 (B) Squadron, Abingdon, 30.11.34. C. H. Schofield, to R.A.F. Depot, Uxbridge, 28.11.34.

Flying Officers.—J. H. Heyworth, to No. 504 (County of Nottingham) (B) Squadron, Hucknall, 22.11.34. A. V. Bax, A.F.M., to

R.U.S.I. ESSAY

The subject of the gold medal essay of the Royal United Service Institution for 1935 will be "Discuss the effect of the development of air power on British interests in the Mediterranean, and suggest how these interests should be protected." The gold medal of the Institution will be awarded to the best essay, should the referees consider it of sufficient merit. The Trench-Gascoigne prizes are 30 guineas to the writer of the essay placed first and 20 guineas to the writer of the essay next in order of merit. Essays must not exceed 9,000 words, and must be received on or before November 15, 1935. Further particulars may be obtained from the Secretary, Royal United Service Institution, Whitehall, S.W.1.

MARRIED ALLOWANCES

A new Air Ministry order provides that a qualified married officer posted for duty with the Fleet Air Arm at home or in the Mediterranean Command will be eligible for married rates of allowances, instead of consolidated allowance (separate families), provided his family is in residence at the officer's permanent shore base. The officer himself, when absent from his shore base on duty, will be regarded for allowance purposes as on temporary duty. The permanent bases of Fleet Air Arm squadrons are Upavon, Netheravon, Gosport, Donibristle, and Malta.

The following Flying Officers relinquish their commissions on completion of service and are permitted to retain their rank:—R. H. Windsor (Aug. 29); B. E. Herbert, D.C.M. (Oct. 24).

F/O. M. T. Bromley relinquishes his commission on completion of service (Oct. 11); F/O. E. A. Burbidge relinquishes his commission on account of ill-health and is permitted to retain his rank (Dec. 5); F/O. C. W. Daggett resigns his commission (Nov. 19).

AUXILIARY AIR FORCE

General Duties Branch

No. 600 (CITY OF LONDON) (FIGHTER) SQUADRON.—F/O. G. H. Compton resigns his commission (Oct. 21).

AUXILIARY AIR FORCE RESERVE OF OFFICERS

General Duties Branch

G. H. Compton is granted a commission as Flying Officer in class A (Oct. 21); F/O. D. L. Doyle is transferred from class A to class C (Nov. 7).

TERRITORIAL ARMY

ROYAL ENGINEERS

Anti-Aircraft Searchlight Companies

ESSEX GROUP.—Offir. Cadet R. L. Edgerton, from Univ. of Lond. Contgt., Sen. Div., O.T.C., to be Sec. Lt. (Dec. 8).

KENT AND MIDDX. GROUP.—Lt. H. L. Newman, late T.A. Res. of Offir., to be Lt. (Dec. 8).

AIR DEFENCE FORMATION SIGNALS.

AIR DEF. BDE. SIGS.—A. P. Jack (late Cadet Corpl., Christ's Hosp. Contgt., Jun. Div., O.T.C.), to be Sec. Lt. (Dec. 8).

No. 3 Flying Training School, Grantham, 25.10.34. C. C. Musselwhite, to No. 208 (Army Co-operation) Squadron, Heliopolis, Egypt, 15.11.34. R. S. Darbishire, to R.A.F. Depot, Uxbridge, 3.12.34. J. W. A. Hunnard, to No. 810 (F.T.B.) Squadron, Gosport, 29.10.34. I. G. Mackay, to No. 811 (F.T.B.) Squadron, Gosport, 1.12.34. W. C. Sheen, to No. 207 (B) Squadron, Bircham Newton, 3.12.34. H. Ford, to Air Armament School, Eastchurch, 4.11.34. Pilot Officer.—A. M. A. Birch, to No. 2 (Army Co-operation) Squadron, Manston, 21.11.34.

Stores Branch

Squadron Leader.—W. A. O. Honey, to Stores and Supplies Depot, Aden, 5.11.34. To command.
Flight Lieutenant.—E. F. Smith, to No. 101 (B) Squadron, Bicester, 1.12.34.

Accountant Branch

Wing Commander.—C. P. Ogden, O.B.E., to Headquarters, R.A.F., Cranwell, 3.12.34. For duty as Command Accountant.
Squadron Leader.—P. Hay, M.C., to R.A.F. Base, Gosport, 3.12.34. For Accountant duties vice Sqd. Ldr. E. N. E. Waldron.
Flying Officers.—R. Peel, to Air Armament School, Eastchurch, 19.11.34. C. A. Proffitt, to No. 101 (B) Squadron, Bicester, 1.12.34.

Chaplains Branch

Rev. William Thomas Rees, to R.A.F. Depot, Uxbridge, 3.12.34. For duty as Chaplain (C. of E.) vice Rev. R. M. Bankes-Jones.

Medical Branch

Flying Officer.—H. Bannerman, to R.A.F. General Hospital, Palestine and Transjordan, 4.11.34.

MARTLESHAM TALKS IT OVER

—At the Dinner Table, during the Annual Fraternisation with the Industry

ONCE more the annual dinner, at which the Commanding Officer and Officers, Royal Air Force, Martlesham Heath, entertain representatives of the aircraft and aero engine firms, can be written down as an unqualified success.

Some years ago the present writer headed his account of the Martlesham dinner, "Martlesham is Pleased," and explained that when one of our aircraft constructors or designers wished to emphasise how good his latest machine was, he would invariably bring into the conversation the sentence, "Martlesham is very pleased with it." And such is the reputation of the establishment at which all new British machines are put through their official performance tests that if "Martlesham is pleased" there is nothing more to be said about the matter. The machine is *right*. That spirit still prevails.

In welcoming the guests, the Commanding Officer, Group Captain Arthur C. Maund, C.B.E., D.S.O., p.s.a., recalled that this was the second occasion on which it had fallen to him to perform this pleasant task. Looking back on the past year, he thought the outstanding event had been the London-Melbourne Air Race. Last year Mr. Fairey had said, in reference to this race, that England would probably be found at the tail end of the procession. Instead of that England had won, and he (Group Captain Maund) thought the very greatest credit was due to the De Havilland firm for producing the "Comet," which was a most efficient machine, as was shown by the fact that it attained a speed of 230 m.p.h. with engines totalling less than 500 h.p. He thought there were three lessons which could be learnt from the "Comet." It had definitely proved that high speed did not necessarily mean high running costs. The "Comet" did eleven miles per gallon of fuel.

High Wing-loading

There was a tendency in some quarters to regard high wing-loading as very dangerous. He pointed out that during the race there were at least two forced landings by "Comets," both carried out without damage. The small structure weight of this machine indicated that high wing-loading was a good way of saving structure weight and getting a large disposable load.

Calling attention to the back cover of the menu card, Group Captain Maund said the machine there shown, which was of no particular type, was fairly typical of British practice. The "gadget king" had had his own way, and the performance was spoiled by projections and excrescences. At the same time all drag was not due to

"gadgets." On the whole he thought our aeroplanes were too large for the work they had to do.

To get real improvement, what was wanted was teamwork like that which came into being in connection with the Schneider Trophy contests. The aircraft manufacturers, the engine firms, the research establishments and the pilots formed a team which produced wonderful results. Perhaps the Melbourne Race would be found to have helped us to realise this fact and the necessity for team work. He hoped British designers would not be content to copy others.

On the military side, Group Captain Maund said we should make up our minds about what our objective should be, and asked if 250 m.p.h. was enough. He did not think it was; we should aim at 300 m.p.h.

Sir Robert McLean—Chairman of Vickers (Aviation), Ltd.—pleaded in a very excellent speech for taking a long view in aviation. He could assure Group Captain Maund that British aircraft constructors were not likely to be content with copying others. They would get the improvements wanted, but they would get them in their own way, with the assistance of the Air Ministry and the Royal Air Force. In the Army and Navy, technical development was much more static than in the R.A.F. He suggested that it would be of great benefit to the service if the road to the Staff College at Andover were to go through Martlesham. It was not, perhaps, generally realised that, compared with the old days, the range of the Navy had gone down considerably. In the air, on the other hand, the range was increasing, and some day the R.A.F. would have as great a range as the Navy. The significance of that was obvious.

A New Technique

Reverting to the subject of construction, Sir Robert said that at the present time a new technique was being developed, and presently Martlesham would have to report on which was the most suitable. He hoped that Martlesham would not confine itself merely to reporting.

Major G. P. Bulman, Assistant Director of Research and Development (Engines) at the Air Ministry, revealed himself as an extremely witty after-dinner speaker, his thrusts and sallies covering a great many home-truths and much common-sense. Unfortunately, his speech did not lend itself to being reported, but many will agree with one of his dictums—that aeroplane constructors had for years been too generously served by the engine people. They should pay more attention to their own excrescences. He agreed with Group Captain Maund that we must try to relive those wonderful Schneider days.

AMERICA'S NEWEST: The Martin flying boat ordered for a proposed Trans-Pacific service of Pan American Airways. Note the sponsons for lateral stability on the water, and the cowlings and placing of the 800 h.p. two-row radial engines.



PRIVATE FLYING

A SECTION FOR OWNER-PILOTS
AND CLUB MEMBERS

HAVING prepared my machine for the flight to Australia and the Far East, I found that my preliminary trip to the Continent, which I had intended to be in the nature of a trial flight, involved me in several weeks' delay. This was no fault of the machine, but was due to the necessity for attending to certain business matters which involved visits to a number of aerodromes in various countries which I have described in foregoing articles. The delay resulted in a rearrangement of plans which made it necessary to proceed direct instead of first returning to England as I had intended.

The route originally planned was *via* Paris, Lyons, and Marseilles, which, of course, is the normal one if the intention is to go through Italy. As my Continental tour had brought me to Mannheim, my real start was actually made from there. Mannheim Airport, although not very big, is an excellent aerodrome with good facilities. Not wishing to return through France and pick up my original route at Lyons, I was able to obtain all the necessary information and weather reports to enable me to set my course through the Alps with the object of reaching Rome non-stop *via* Milan. The alternative routes considered were *via* the St. Gotthard Pass and the Simplon. I chose the latter, which, although rather longer, is, on the whole, to be recommended, and certainly provides a most interesting flight if one takes every precaution to obtain accurate weather reports. In any case, the St. Gotthard route is rendered impracticable for private aircraft owing to the Swiss prohibited area in this region.

Prohibited Areas

THE question of prohibited areas in the various Continental countries is a problem which will have to be given very sympathetic consideration by all concerned if private air touring, in particular, is to receive the encouragement it needs. Many of the most direct air routes between European territories are made impossible by the restrictions at present in force. Although in some cases "corridors," through which one may fly, are arranged for, wide detours are often rendered necessary, involving very considerable extra mileage. There is a tendency in some countries, such as Italy, for such areas to be increased; others are removing these impediments, Greece having abolished some fifteen or twenty formerly prohibited zones. Approaches to many important aerodromes are also impeded in this way, notably Brindisi, Venice, Tunis, and Oslo.

The route chosen, leading down the beautiful Rhine Valley as far as Basle, and thence, *via* Neuchatel to Lausanne, is well worth while. From Lausanne one proceeds along the north-east shores of the Lake of Geneva and down the Rhône Valley, passing Ville Martigny, from which point Mont Blanc is some thirty kilometres to the south. Continuing along the Rhône to the east, some of the loftiest peaks of the Bernese and Valais Alps are visible. Among these the famous Matterhorn lies to the south,

while the Jungfrau is seen some twenty kilometres to the north of the point at which one bears to the south to cross the Simplon Pass. Thence along the Val di Vedro one enters Italy, and, passing Domodossala, our course takes us across the lovely Lake Maggiore *en route* for Milan.

No other country in Europe provides, in such a small area, a greater wealth of mountain scenery than does Switzerland, and the route which I followed gives access to this district without passing over the highest ranges. For those who are not airmen, and who enjoy an aerial

view of this unique spectacle, Swissair (The Swiss Air Traffic Co., Ltd.) run special air cruises from Zurich and Geneva airports. Close-up views of the famous peaks mentioned, and many others, may thus be obtained under safe and comfortable conditions. The machines used are the reliable three-engined Fokkers, and many thousands of miles have been flown without mishap of any kind.

Continuing our journey, passing over the Isola Bella near Stresa on Lake Maggiore, we make for Milan, some seventy kilometres to the south-east.

Milan, the "Queen of Lombardy," is well worth a visit, and were this a more leisured tour one would be tempted to land. We have to reach Rome before nightfall, however, and, with a glance at the famous many-spired cathedral, we make our way across the fertile plain of the River Po to Genoa. From Genoa we continue down the coast well out to sea to avoid the prohibited area around the naval base at Spezia.

Our next objective is Pisa, easily recognised from the air by its "leaning tower." The tower stands within the so-called "field of miracles," being in close proximity to several other unique buildings, known as the Duomo, the Baptistery, and the Camposanto. Surely there are few places where so many interesting pieces of architecture are contained in so small a space, even in this land of famous buildings. We fly on through Tuscany, arriving at Rome about dusk with not much petrol on board, having flown non-stop from Mannheim in 7½ hours.

Rome's Airport

ROME has a civil Customs airport and a seaplane station. The aerodrome, which is surrounded by a concrete runway which may be used for taxiing to take off, is large, measuring 1,700 by 1,200 metres. It has a good, level grass surface, but is apt to be somewhat soft in wet weather.

As is the case with so many aerodromes, there are not yet any proper night-lighting arrangements, but it is expected that this deficiency will be made good shortly. Soon, also, the airport hotel will be completed. I found the officials most obliging and willing to take English money for the various aerodrome charges without any trouble.

Having housed my machine, I proceeded into Rome, which is reached in ten to fifteen minutes by taxi, to put up for the night.

NOTES

by

LORD SEMPILL

A.F.C., F.R.Ae.S.

FROM THE CLUBS

Events and Activity at the Clubs and Schools

CARDIFF

One new flying member joined the Cardiff Aeroplane Club last week, during which 5hr. 15min. dual, and 6hr. 20min. solo were flown.

KENT

Flying for the week ending December 1 at the Kent Flying Club was: dual 8 hours, and solo 5 hours. Two new members have joined. Mr. P. S. Coleman, who is the first pupil to be trained entirely on the Miles "Hawk," has gone solo.

CAMBRIDGE

The Cambridge Aero Club and Marshall's Flying School managed to put in 18 hours dual and 15 hours solo during a week of bad weather. Miss Owen made her first solo flight.

Four members of the Civil Aviation Service Corps attended on Sunday, December 2, and, in spite of terrible weather, all had a short spell of dual.

NORTHAMPTONSHIRE

Last week shows a good increase in the flying hours at Sywell, and four new members joined. A number of members are taking the blind flying course, and a machine for this purpose has been added to the fleet.

During Christmas week the Club will be quite active, an event having been organised for each day.

MIDLAND

The Midland Aero Club held their annual dance at the Grand Hotel, Birmingham, on December 7, when some 350 members and their friends were present.

The Lord and Lady Mayoress of Birmingham attended, and among those present were Major Gilbert Dennison (president of the Club), Sqdn. Ldr. Wright, Flt. Lt. Bain, F/Os. Manton and Flemming and other officers of No. 605 Auxiliary Squadron, Castle Bromwich.

The fact that everyone knew everybody else ensured a good "take off," the floor was not so slippery as to cause skidding on the turns, and the ample sitting out accommodation ensured happy landings after every "flight," so altogether it was a thoroughly enjoyable affair.

CINQUE PORTS

A new member joining the Club last week was Mr. J. L. Bebb, who is at Lympne for two months in order to get more practical experience before application for his "A" and "C" Ground Engineer's Licences. He is taking a course of lectures from Mr. J. G. Brown, A.F.R.Ae.S. The weather again has been most unkind, and the total flying amounted to eighteen hours.

As reported last week, the Club held a dance on Friday night at the Grand Hotel, Dover. Another will be held at the same place on January 11.

All those who know Lympne will be sorry to hear that Mr. A. L. Patterson has left after many years in order to take up an appointment with the A.I.D. at the Rolls-Royce factory, Derby. Mr. J. G. Brown is now Chief Ground Engineer.

BROOKLANDS

Flying hours last week have been very low at the Brooklands Club, but one member has gone solo.

The Club have started its yearly amateur theatricals under the auspices of Mr. A. Woods—one of the film directors at Elstree. They hope to be able to entertain members with sketches some time in January.

The College of Aeronautical Engineering has been *en fête*. A holiday was granted for the Royal Wedding, and on December 4 this College and that of Automobile Engineering amalgamated for their annual dinner and dance, which was held at the Grosvenor House Hotel.

Any pupils or members wishing to attend the annual works dinner (bachelor party) at the Ship Hotel, Weybridge, on December 14 should apply early to the secretary of the Club. Tickets are 5s., and morning dress will be worn; time, 7.30 for 8 p.m.

Two More Portuguese Flights

Lt. Humberto da Cruz, on his "Leopard Moth," arrived safely at Timor after a creditable flight carried out with regularity. On the return journey, *via* Macau (another Portuguese possession near Hong-Kong), he arrived at Singapore on November 15.

A further long-distance flight is contemplated by Capt. José

HATFIELD

The bad weather, though interfering with practical aviation, does not appear to be affecting general enthusiasm, for six new members joined the London Aeroplane Club last week.

BRISTOL AND WESSEX

One new flying member joined the club, and Mr. Y. G. Bhandarkar began a blind flying course during last week. The Club will be closed on December 24, 25, and 26, but the Bristol Airport will remain open for traffic.

HANWORTH

Two members have started an instructor's course at Hanworth. Flying for the week totalled 28 hr. 55 min.

Members are asked to note that the dinner-dance arranged for the New Year's Eve has been cancelled owing to the fact that very extensive alterations to the Hanworth Country Club will be in progress at this time.

HAMPSHIRE

During November, 109 hours were flown by the Hampshire Aeroplane Club, including two first solos by Miss C. Cundell and Sub. Lt. Henderson, R.N.; one new member joined. Five members qualified for their "A" licences. A Klemm "Swallow" was hired during the month, and this machine proved of great interest to members.

On the 28th some 200 members and guests attended the Ninth Annual Dinner and Dance at the South-Western Hotel, Southampton. The landing competition held earlier in the month was won by Mr. E. J. Coutts.

JUNIOR AERO

Members of the Junior Aero Club and others will be interested to learn that arrangements have been made to carry on the Meetings and Dinners at No. 6, New Compton Street. As hitherto, the moving spirits of the Club will be Major Eric Teesdale and Mr. Geoffrey Dorman. A Dinner will be held early in January in celebration of the London-Melbourne Air Race, and it is hoped that Charles Scott, Campbell Black, and Messrs. Parmentier and Moll will be present. There will be a general meeting of the Club at 9.0 p.m. on Monday, December 17. It will greatly assist the Secretary if members will telephone him beforehand at Temple Bar 1493.

LIVERPOOL AND DISTRICT

The total hours flown at Speke and Hooton from March to November inclusive were: 1933, 2,213; and 1934, 2,128. The number of pupils indicates a healthier position than at any time in the last three years.

The Club will be closed at both aerodromes from December 24 to December 27 inclusive. It will be open again from December 28 to January 1, and closed on January 2.

The Club has been approved by the G.A.P.A.N. as a centre for classes in connection with the examination for second-class Navigators' Certificates. The lectures are being delivered in the club house at Speke.

The hourly rate for night flying is now reduced and will in future be: Dual, £2 14s., and solo, £3.

AIR SERVICE TRAINING

In spite of the consistently bad weather during November, a total of 610 hours was flown. It is becoming more and more apparent that the demand for flying instruction has ceased to be seasonal.

Capt. L. A. Walters and Capt. H. J. Horsey, both Imperial Airways "skippers," have completed their special courses in instrument flying. As a result of the recent examination, F/O. K. M. Cass has obtained his second-class Navigators' Licence.

The school has been visited by the Chinese Aviation Mission at present in this country, headed by Colonel Mow, who is vice-commandant of the Central Aviation School at Hankow.

An appointment as a first officer with Imperial Airways has been secured by Mr. F. U. Hollins, who has just completed the long course at Air Service Training. He is the fourth A.S.T. student to join Imperial Airways.

Pimenta, of the Portuguese Military Aeronautical Force. This will be to Angola (Portuguese West Africa), then to Mozambique (Portuguese East Africa), and back to Lisbon. At the moment it is not known what the aircraft to be used will be. The flight will be purely a sporting undertaking, and it is understood that Capt. Pimenta will have the financial support of all the various sports clubs in both Portugal and in her Colonies.

DUAL PERSONALITY

The Flapped "Hawk Major" from the Amateur's Point of View: A Viceless Slow Approach Coupled with a High Cruising Speed

THE almost incredible stories about the gentle approach of the "Hawk Major" with split flaps suggested the possibility that such performances were all in order for expert hands, but that the averagely competent amateur would not be encouraged to play similar games.

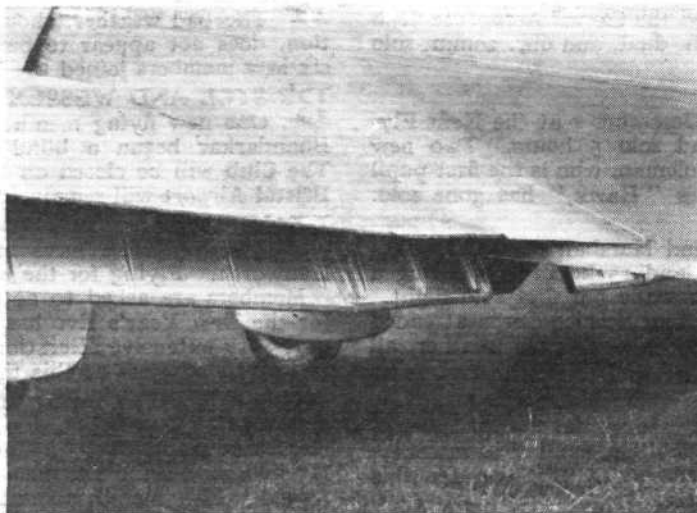
When, therefore, the opportunity of a demonstration occurred, through the good offices of Aircraft Distributors, Ltd., I leapt at the chance while preparing myself for a serious disappointment and for the memorisation of a long list of "don'ts."

As it happened, I discovered the only "don't" for myself, and the stories were found to be far from incredible.

By accident or otherwise, the Miles split flaps not only reduce the take-off run by a clearly perceptible distance, steepen the glide and reduce the landing speed, but they actually cause the lateral control to "stay put" in proportion to the lowered landing speed. And all that cannot sound nearly so much of a fairy story as the fact appears in practice. As far as I could gather, the rudder faded out first—an occurrence which will comfort those who look on the rudder as the father of all spins—and the fore and aft control remained to the bitter end, with the slipstream to help.

To one whose experience has been largely confined to conventional biplanes and high-wing monoplanes, the flapped "Hawk Major" requires a strange, but not difficult, technique of approach. Instead of a pronounced and obvious stall, there is an imperceptibly increasing sink at speeds below 55 m.p.h., and the final approach speed must be gauged with this fact in mind. My "don't" discovery was: "Don't make full use of the characteristics if you value your undercarriage"—though a last-minute burst of throttle will save it. The latest models, incidentally, have air wheels which will allow, perhaps, a little more latitude.

From the point of view of the comparatively inexperienced,



IN "APPROACH" POSITION: The split flaps on the "Hawk Major"; notice how the central flap opens in the reverse direction.

difficulties. The nose drops pleasantly at each movement, and the machine takes up a 55-m.p.h. glide with the flaps down and without readjustment of the tail trimming lever. The outboard flaps drop down to 45 degrees in the second position, and the centre flap opens in the reverse direction—a system of balancing which accounts for the ease of operation.

The amount by which the actual glide is steepened varies, of course, with the speed, but it is out of all proportion to the size of the flaps themselves. Some indication of this can be obtained from the facts that the loss of a thousand feet occupied a minute longer with the flaps up and that, when they were opened in level flight at 75 m.p.h., the speed dropped to 60 m.p.h., though it was difficult to make quite sure that the machine was not climbing slightly. The approach at 55 m.p.h. is a great deal steeper than that of a conventional training biplane and, on my first two "flapped" approaches, I under-shot quite considerably.

Speaking generally, the outstanding impression was the difference, so to speak, between an aeroplane which was definitely travelling very fast and one which was floating down restfully and under full control. The flapped "Hawk Major," in fact, possesses a dual personality.

H. A. T.

By "Comet" to the Congo

Mr. Bernard Rubin's D.A. "Comet," which was flown to Australia and back in a fortnight by H. Cathcart Jones and Ken Waller, is to be used to take Christmas mails to the Congo.

The machine will be flown to Brussels by Mr. Waller and an at present unspecified Belgian pilot, who will then fly the mails to Leopoldville. The scheme has the backing of the Belgian Post Office, and some 250 lb. will be carried.

At the moment of going to press the "Comet" is ready for test at Hatfield after modifications, and, in its new form, will still have a safe range of more than 2,000 miles. The first stop will be at Oran, Algeria, and the second at Niamey.

"Drone" Production Restarting

Ultra-light aeroplane enthusiasts will be glad to hear that manufacture of the "Drone" will probably be restarted at Hanworth, as Herr Robert Kronfeld hopes shortly to take over the assets of the B.A.C. Company.

"Black Magic" Not Sold

Commenting on a news paragraph published last week, to the effect that the Mollisens had sold their "Comet" to two Portuguese gentlemen, Mrs. Mollison writes to point out that actually the machine is still the joint property of herself and her husband, though they are prepared to consider offers for it.

Diary of Forthcoming Events

Club Secretaries and others are invited to send particulars of important fixtures for inclusion in this list.

- Dec. 13. "Recent Research in Metallurgy." R.Ae.S. Lecture by Dr. W. H. Hatfield.
- Dec. 14. London Aeroplane Club Annual Dinner and Dance, Park Lane Hotel, Piccadilly, London.
- Dec. 15. Masonic Country & Flying Club, Christmas Dinner and Dance, "Julian Hill," Byfleet Rd., Weybridge.
- Dec. 15. York County Aviation Club, Christmas Dinner Party, the Club House.
- Dec. 18. Herts and Essex Aeroplane Club Annual Dinner and Dance, Park Lane Hotel, Piccadilly, London.

- Dec. 18. Old Etonian Flying Club, First Annual Dinner, Savoy Hotel, London.
- Dec. 19. Banquet and Dance in honour of Mr. C. W. A. Scott and Mr. T. Campbell Black, Grosvenor House.
- Dec. 29. Association Football, R.A.F. v. Oxford University, at Ilford.

1935

- Jan. 29. Newcastle-on-Tyne Aero Club Annual Dinner and Dance, Barras Bridge Assembly Rooms, Newcastle-on-Tyne.

COMMERCIAL AVIATION

— AIRLINES — AIRPORTS —

THE FIRST AUSTRALIAN AIR MAIL

Inauguration Ceremony at Croydon : To Brisbane in Twelve Days



BENEATH HENGIST'S WINGS : Lord Londonderry opening the impressive ceremony at Croydon last Saturday.

ON a dais beneath the lower wing of *Hengist*, which itself dwarfed the surroundings in the hangar, a new chapter in Empire air mail history was opened with fitting ceremony last Saturday, when the first all-air mail was dispatched to Australia.

Soon after mid-day one of the two H.P.42's left with passengers for Paris and at 12.30 p.m. Lord Londonderry opened the proceedings. The future of this service could, he said, be confidently entrusted to Imperial Airways, with their associates, Indian Trans-Continental Airways and Qantas Empire Airways. He regarded this route as a true sign of that Imperial spirit of co-operation which will always be an indispensable factor in the efficiency of our air communications. We had our own distinctive problems and did not lack the ability or the confidence to solve them in our own way. It seemed appropriate that this first mail should be a Christmas mail, carrying good wishes to the Dominions.

Lord Londonderry then handed to Sir Kingsley Wood, the Postmaster General, letters from Their Majesties the King and Queen, from the Prince of Wales, from the Prime Minister, from the Secretary of State for the Dominions, and two of his own.

The departure of the aeroplane, said Sir Kingsley Wood, marked the culmination of many months' endeavour. Five and a half years ago the opening service to Karachi carried 8,000 letters, while on Saturday roughly 100,000 letters and 500 lb. of parcels were despatched. The Australian extension could not fail to cause an unprecedented rise in traffic.

Mr. S. M. Bruce, the High Commissioner for Australia, was attending a committee of the League of Nations at Geneva, and a message was read by Mr. J. G. McLaren,

C.M.G., in which he said that faster communications would inevitably tighten the bond between the component parts of Empire.

Ceremony or no ceremony, the air traffic must leave Croydon to time, and the New Zealand High Commissioner's speech was interrupted fairly freely by a trio of Pratt and Whitney "Hornets" and by one other unidentified engine. Sir James Parr stressed the manner in which a letter could now be delivered in New Zealand in seventeen days, whereas, in the sixties, a ship took no less than four months on the journey. In a year or two, he said, the mail would go from London to New Zealand in less than a fortnight.

Thereupon Sir Kingsley Wood franked the official letters with a silver stamp, placed them in a blue mailbag held by a G.P.O. official, who in turn handed it to Sir Eric Geddes, Chairman of Imperial Airways.

To those who, ten years ago, set out to build these Imperial air ways, said Sir Eric, the new extension appeared as a dream come true. Canada and New Zealand had still to be painted in the picture, but that would not, he hoped, be long delayed.

The four "Jupiters" started promptly, and *Hengist*, in charge of Capt. L. A. Walters, with L. V. Messenger as second officer, and Flight Engineer A. E. Coward and Wireless Operator A. G. Steadman, took off for Paris after a very short run in the strong wind.

This particular machine flew through France to Rome, and, carrying the Egyptian and Indian mails, is due to continue to India to act as a relief unit. The Australian mails were transferred in Paris in the ordinary way to a train for Brindisi. In future the mail will leave London on Saturday morning, arriving in Brisbane after twelve

Commercial Aviation

days, and the return flight will start on each Wednesday. On this special occasion the return flight, carrying 1,231 lb. of mail matter, was inaugurated on Monday by the Duke of Gloucester, assisted by the Governor General, the Governor of Queensland, and the Prime Minister. Both R.A.A.F. and private machines provided an escort for the machine, which was piloted by Mr. L. J. Brain, the chief pilot of Qantas Empire Airways, Ltd.

Owing to a temporary dislocation caused by the Longreach tragedy, Imperial Airways are carrying the first mails through to Port Darwin, using Armstrong "Atalantas,"

after which either a Qantas D.H.86 or D.H.61's will continue the journey. In the meantime, a report has been made on the accident.

Though the mail rate is low enough in appearance (1s. 3d. per half ounce) it is comparatively high when heavier packages are considered. As an example, the cost was 17s. 6d. for each copy of *Flight* sent out. *Flight*, incidentally, also sent a number of letters.

In due course, no doubt, passengers will be carried on the Singapore-Brisbane section, but for the first few months, at least, the service is for mails only.

AN EAST COAST ROUTE TO SCOTLAND

Aberdeen Airways' Projected Route Surveyed : The Need for Wireless : Developments at Dyce : The D.H. "Dragon Six"

FOR a survey flight between two cities so far apart as London and Aberdeen, the month of December would not, on the face of it, appear to be the best. The chances of getting through to time schedules on certain pre-arranged dates are likely to be far from good, and, if such a flight has been given some prior publicity, the adverse effects of failure are likely to be pronounced.

If one thirsted for knowledge of the real winter conditions over such a route, however, a better month could not have been chosen. The operator will, if he has reasonably bad luck with the weather, discover exactly where the difficulties of a scheduled service lie and will be able to combat them.

Last week Mr. E. L. Gandar Dower, with the co-operation of the De Havilland Aircraft Company, organised a survey flight between Hatfield and Dyce (Aberdeen).

A "Dragon Six," piloted by Captain Hubert Broad, was twice defeated on the outward journey by weather conditions, and the obvious moral was made still more obvious. Wireless and D/F equipment, coupled with perfect organisation, are absolutely essential if the projected service is to be a success, and to that end the Air Ministry might lend assistance to the intermediate municipalities concerned. Hull, the first stopping place, will have its mobile radio equipment back again next year (it is at present at Pulham); Dyce is to be equipped; but at present the most difficult part of the route, between Hedon (Hull) and Dyce, is almost entirely without facilities.

From the Passengers' Viewpoint

In general, the East Coast route is very reasonably well provided with aerodromes for use in case of emergency, and the "Dragon Six" showed what could be done by covering the whole outward journey in a flying time which was very little more than three hours—against the eleven hours or so taken by the train. The route is an interesting one from the passengers' point of view, and no doubt Edinburgh, which might provide a better percentage of traffic than Aberdeen itself, will be included among the stopping places if and when a good civil aerodrome is fully developed. Turnhouse, of course, is a Service aerodrome, and Macmerry is undeveloped. The saving in time with a fast machine is obviously worth while to the business man just as soon as he knows quite definitely that the service will run, and with clockwork regularity.

Mr. Gandar Dower's Aberdeen airport at Dyce should, when it is completely finished, be one of the very best in the provinces. Certainly considerable sums of money have been, and are being, spent in its development for use by Aberdeen Airways, Ltd., and the Aberdeen Flying School, Ltd.

The complete runs will be from 600 to 800 yards, and the approaches are not only good but likely to remain good, for Dyce is far enough from Aberdeen to be free from building developments. Nevertheless, it is only five miles from the centre of the city.

When Mr. Gandar Dower bought the land it must have appeared to be a most "unnatural" landing ground, with a stream running clean through the centre. Since that time the stream has been diverted while a special 650-yard concrete "box" was made for it beneath the aerodrome surface, the greater part of the aerodrome has already been Hunterised and laid out with a complete draining system, and work is proceeding rapidly on the remaining portions.

In due course a control tower with wireless equipment will be built on a "peninsula" to the north, and large and small hangars, a power house, and a clubhouse stand now on the eastern boundary. The village of Dyce itself, with a railway

station, adjoins the north-east corner. The clubhouse deserves special mention for its combination of internal beauty and utility.

Mr. E. A. Starling is the pilot in charge of the school, of charter work, and of the twice-a-week Glasgow service carried on through the winter while wireless is awaited. It was interesting to note that two Klemm "Swallows" are used for the major part of the training, with a Blackburn "Bluebird" and a "Puss Moth" for more advanced work. A Short "Scion" and a D.H. "Dragon" are used by Aberdeen Airways, but when the new service is opened "Dragon Sixes" will probably be put on.

Next year's plans depend entirely on the provision of wireless facilities and on the possibility of obtaining a mail contract from the Post Office. Highland Airways have run between the Orkneys, Inverness and Aberdeen; Aberdeen Airways' own Glasgow service should connect with the West Coast and Irish routes; and, after April 1, Aberdeen passengers will be able to catch the K.L.M. service to Amsterdam at Hull if the time-table can be arranged to suit. It is possible, too, that Newcastle's new Woolsington aerodrome, which is nearer the city, will be ready during next year. Looking further into the future, there are possibilities that a direct service from Aberdeen to Norway may be opened, but it is difficult to see the potential traffic to justify such a service.

The return trip in the "Dragon Six" gave some indication of the true possibilities of a fully organised service. Despite sundry climatic deviations, the run from Aberdeen to Hatfield was made in a flying time of 3 hr. 18 min.—an average of 125 m.p.h.—without including a seventeen-minute stop at Cramlington, but with a slightly adverse wind. The "Dragon Six" cruises comfortably at 137 m.p.h. and was noticed by a member of the staff of *Flight*, who was on board, to be flying at 147 m.p.h. for some time with the "Gipsy Sixes" turning over at 2,100 r.p.m. In reasonable weather conditions the machine can be trimmed to fly both hands and feet off for long periods.

Now that the more-speed-at-any-cost tumult has died down, it is interesting to notice that the D.H.89 carries six passengers and their luggage at a cruising speed of 138 m.p.h. and costs no more to run *per mile* than the original "Dragon." The higher speed balances the slightly higher consumption of the "Sixes."

Orkney Service Change

As from December 1 until March 31 the Highland Airways machine will leave Kirkwall for Inverness at 1.30 p.m., instead of 2 p.m., so that it may arrive before dark.

The Lahore-Karachi Service

The first mail, passenger and freight service between Lahore and Karachi (via Multan and Sukkur) was opened on December 3 by Indian National Airways, Ltd. Regular services by I.N.A. are now running between Karachi and Lahore, Calcutta and Rangoon, and Calcutta and Dacca, with charter facilities at Delhi, Calcutta, Rangoon, and Lahore. The value of the new service is indicated by the fact that this information was sent by the first service and reached the *Flight* office on December 10.

The Calcutta-Rangoon service, incidentally, is being duplicated, machines leaving Calcutta on Tuesdays and Thursdays.

HESTON

Ards Traffic Figures : Christmas Bookings for Jersey : Those Wedding Pictures

THE Ards Airport register shows 84 take-offs or landings of machines during September, October and November. There was, of course, a considerable falling off in traffic when Hillman's Airways summer service ceased operation early in October, and, since Hillman's mail service has started, there will naturally be a great improvement in the figures.

Advance bookings show that there will be considerable Christmas air traffic on the Jersey route. Two hundred and thirty passengers have already booked their passages between England and Jersey during Christmas week. Saturday, December 22, is the rush day, and although tides and shortened daylight prevent the running of more than one service each way at this time of year, several aeroplanes will make the trip together.

The British Air Navigation Company transported the "Wembley Lions" ice-hockey team—eleven of them—to Paris in a trimotor Ford on December 1, *en route* for Prague, whither they proceeded by train.

Perhaps the finest achievement among the many Royal Wedding charter flights was that of Mr. F. W. Griffith, of

Everson Flying Services, Kildonan. Leaving Heston for Dublin in a "Fox Moth" at about 1.30, he landed safely under difficult conditions at Speke aerodrome, Liverpool, after more than one and a half hours of virtually blind flying. He took off again shortly, realising that the approach of night would render his landing at Dublin even more difficult, but he brought the machine down safely at his destination, Kildonan, at 4.40 p.m.

Lord Amherst in an Avro "Commodore," with Mr. Flowerday as co-pilot and Mr. Brown as wireless operator, represented B.A.N.C.O. in the wedding rush. They were successful in delivering photographs and films to Newcastle, landing by flares at 4.45 p.m. at Usworth. Capt. Birkett in a "Leopard Moth" reached his destination, Leeds, in 1 hour and 15 minutes. Two other flights, one to Jersey and another northwards, were abandoned.

Two Spartan "Cruiser" monoplanes owned by Bata's, of Zlin, Jugo-Slavia, landed at Heston on December 2 *en route* for the Spartan Aircraft Company's works at Cowes, where they are to undergo the annual C. of A.

CROYDON

Thoughts on the Australian Mail : "Hengist" Goes East—to Stay : Plans for Next Summer—Heavy Traffic : Some Structural Alterations Needed at the Airport

IT was a good idea to hold the Australian mail ceremony inside the big Imperial Airways hangar, under the towering bulk of *Hengist*, which looked all the larger for being indoors, though, as it happened, the weather was both mild and fine.

Incidentally, I am told that you can send a letter out to Australia and receive a reply in the time it takes to send a letter one way only by surface means. I did not hear this point mentioned in the various very excellent broadcasts, but it is, in my humble view, a point of paramount importance to the public.

On Sunday morning I received an envelope sent out by the Douglas in the special mail carried during the Australia Race. It is marked, "K.L.M. liner *Uiver* PH-AJU arrived at Melbourne 10.54 a.m. Wednesday 24.10.34." Needless to say, it came back by surface transport, and was posted in Sydney on November 6, 1934. It seems just as well to mention the year when surface transport is employed!

Our old friend *Hengist* has, it seems, left Croydon permanently. Capt. Walters is flying this machine to Cairo, and, I understand, *Hengist* will then go on to Delhi and work up and down the Cairo-Karachi stretch. *Helena*, another H.P.42, went out East about a year ago, and is usually to be found somewhere between Cairo and Nairobi. The departure of *Hengist* leaves only *Horatius* and *Heracles* of this class in Europe. We are losing Mr. Messenger, too; he will be employed as a commander on the Iraq Petroleum Pipe Line Patrol.

There seems to be a sort of competition among very small children who travel by air. The best "solo" or unaccompanied flight was by Master Jacques Mans, aged three, who flew to Brussels last week, but the prize for extremely tender

years went to Master (or Miss?) Smit, who has not yet received a Christian name, being but four or five weeks old. Baby Smit flew from Croydon to Rotterdam in an attaché-case instead of a cot.

The coming summer will probably be a very busy one. I hear that K.L.M. will operate five services each way daily, the two most important being run with the 32-seater Fokker FXXXVI and with the smaller FXXII, fitted with four "Wasp" engines and carrying twenty passengers. The first K.L.M. machine is to leave at 7.0 a.m. and the last arrival will be at 11.0 p.m. Imperial Airways and Air France will probably run a large number of services each to and from Paris, and D.L.H. will run one or more services to Berlin. Sabena, with new big Caproni machines, may extend activities, and a number of new inland services may be expected early next year.

A matter which causes the operating companies considerable concern, and one of which I made mention this time last year, by the way, is the total lack of activity on the part of the authorities regarding very long-promised and very urgently required building alterations. It must be four or five years since it was pointed out to the Air Ministry that it was essential for passengers' passports to be examined whilst they were idly waiting for baggage to be unloaded from incoming aeroplanes. If these structural alterations are not to be commenced at once, the best we can hope for is that the passengers' entrance from the tarmac will be a mass of scaffolding and the atmosphere thick with brick-dust in the very height of our busy season.

The Department concerned with this sort of thing is notoriously dilatory, and should have a rap over the knuckles from the "proper authority."

A. VIATOR.

Hillman's Airways, Ltd.

An announcement has now been made to the effect that a new company, known as Hillman's Airways, Ltd., has been formed with a capital of £150,000 to acquire Mr. Edward Hillman's air line business.

Air Mails Across South Atlantic

The first commercial success of the Bleriot flying boat *Santos-Dumont* was achieved when, recently, this machine made the flight from France to Natal with the mails of Air France. The flight from Dakar in Africa to Natal in South America was made in 16½ hours, non-stop. Leaving Dakar at 4 a.m., the *Santos-Dumont* crossed the equator at 4.10 p.m., and reached Natal at a quarter past eight the same evening. M. Lucien Bossoutrot was the chief pilot on this flight.

Another Jersey Venture

After January 1, Jersey Airways are to operate a twice-weekly service—on Tuesdays and Thursdays—between St. Helier and Rennes, north-west France, which is an important railway junction.

It appears likely that this service will be useful to the general passenger who may be travelling to any part of France. Certainly the summer service to Paris did not suggest any great potentiality; an average of 1½ passengers per trip were carried as against five on the normal services from England. The experiment will at least be an interesting one.

Some idea of the public attitude towards useful air travel is given by the fact that, as stated in the Heston notes, Jersey Airways have already made 230 bookings for the period between December 22 and 28.

THE INDUSTRY

THE "DEMEC" NAVIGATION LAMP

SEVERAL important advantages are claimed for the "Demec" tri-coloured aircraft navigation lamp, which has been extensively fitted to aircraft in most parts of the world during the past year or two. In fact, its success on machines with a wing span of 65ft. or under has resulted in its being fitted as standard by several leading aircraft constructors. The "Demec" system of lighting is that referred to in the Air Navigation Order as Central Lighting, and stands as distinct from wing-tip lighting. Three lamps are, of course, necessary in the latter system—one port and one starboard mounted on the wing tips, and one tail lamp. This method naturally calls for a comparatively large amount of wiring, whereas in the "Demec" system, where only two lamps are employed—a saving of some seven or eight pounds is obtained in this item alone. Furthermore, with the "Demec" lamp no wiring is carried through the wings of the machine—as in the case of wing-tip lamps—and therefore the difficulties associated with the latter system are avoided.

As stated above, only two "Demec" lamps are employed, one being mounted high up in the centre of the machine—generally on or near the top plane centre section or cabin roof, according to type of aircraft—and the other mounted on the underside of the fuselage, behind the wings. Each lamp shows red to port, green to starboard, and white aft. The lamp, which weighs 12oz., is streamlined, and the bulb may be replaced while the machine is in flight. It is 6½in. long and 3¼in. wide, and is in itself an attractive fitting. "Demec" navigation lamps are manufactured by "Mechanism," of 6a, George Street, Croydon, Surrey.

AERIAL AERIALS

Rollason Aircraft Services, Ltd., of Croydon, are now fitting short-wave aerials in the D.H.84's at the cost of £20. The first one installed in a "Dragon" belonging to Commercial Air Hire has been an unqualified success.

A ROLLS-ROYCE APPOINTMENT

ROLLS-ROYCE, Ltd., announce that Lt.-Col. M. Ormonde Darby has been appointed aero sales manager in succession to the late Mr. H. E. Pooley. Col. Darby is well known in aviation circles and served with the Royal Flying Corps and Royal Air Force during the War, and held staff appointments of Assistant Director and Deputy-Controller. For the last fifteen years he has been closely associated with aircraft engine manufacture and sale as managing director of the Aircraft Disposal Co., Ltd. (later A.D.C. Aircraft, Ltd.), and Cirrus Aero Engines, Ltd.

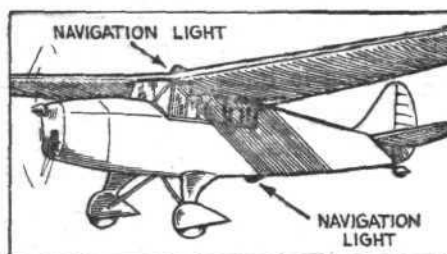
A PILOT'S WRIST WATCH

A NEW watch has recently been manufactured, specially for aircraft pilots, by G. M. Lane and Co., Ltd., of 26, Ludgate Hill, E.C.4. This is a wrist watch incorporating a movable verge ring which can be set to give the time in the air of any flight, either in minutes (instructional flying), or in hours (for cross-country work). The watch is also fitted with long straps to go outside the gauntlet.

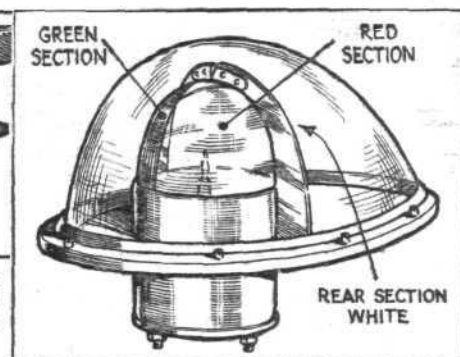
The movement is specially non-magnetic, and keeps accurate time at all altitudes or climates—sudden change of altitude does not affect it. This watch, which is called the "Aero," also has a luminous dial, clearly readable.



PRACTICAL: G. M. Lane's "Aero" watch, which has several features to appeal to the pilot.



"DEMEC" CENTRAL LIGHTING: These are mounted centrally and each shows a red, green and white (rear) light.



AIRCRAFT COMPONENTS

THE flap-operating equipment manufactured by Aircraft Components, Ltd., of Cheltenham, Glos., which is now standard on the D.H.86 "Dragon," is, together with the Dowty knee-action retracting unit, being fitted to the Bristol eight-seater civil monoplane.

TENDERS FOR PORTABLE HANGAR

THE Commercial Secretary to the Residency, Egypt, reports that the Egyptian Ministry of Communications is calling for tenders, to be presented in Cairo by January 3, 1935, for the supply and erection of a portable aeroplane hangar at El Arish. Further details have been communicated by the Department to firms whose names are entered on its "Special Register." Firms desirous of offering a hangar of United Kingdom manufacture can obtain the further details of this call for tenders, together with particulars of the "Special Register" service of information, upon application to the Department of Overseas Trade, 35, Old Queen Street, London, S.W.1. Reference G.Y. 14566 should be quoted.

HEMMING AND PARTNERS' NEW DIRECTOR

Wing. Com. F. C. V. Laws has joined the board of directors of H. Hemming and Partners, Ltd., who have on hand large contracts for air survey work. Wing. Com. Laws, who is at present in Western Australia, is manager of the expedition which H. Hemming and Partners were engaged to equip and manage for the Western Mining Corporation. Wing. Com. Laws retired from the Royal Air Force in 1933, when holding a post of Commandant of the School of Air Photography. He is well known as an expert on air photography, and has largely been responsible for the cameras as used to-day for air survey work, and was for some time a member of the Air Survey Committee at the War Office.

PUBLICATIONS RECEIVED.

Annals of Lloyd's Register.—Centenary Celebration of the Reconstitution of Lloyd's Register of Shipping. October 1934. London: Lloyd's Register of Shipping.

Aeronautical Research Committee Reports and Memoranda. No. 1603. Lift and Drag of a Wing Spanning a Free Jet. By H. Glauert. March, 1934. Price 6d. net.

Aeronautical Research Committee Reports and Memoranda. No. 1611. The E.M.F. Between Metals in Seawater. By J. W. Willstrop. June, 1934. Price 9d. net.



AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m = motors. (The numbers in parentheses are those under which the Specification will be printed and abridged, etc.)

APPLIED FOR IN 1933

Published December 13, 1934

- 14,536. VICKERS (AVIATION), LTD. and WALLIS, B. N. Balancing means for control surfaces of aircraft. (419,748.)
- 15,927. MOBBS, R. O. Aeroplanes. (419,539.)
- 28,102. L.P.R. Co. Aeroplane wings. (419,559.)
- 29,734. FAIREY, C. R. Controlling mechanism of aeroplanes. (419,687.)
- 31,068. ARMSTRONG WHITWORTH AIRCRAFT, LTD., SIR W. G., and LLOYD, J. Bomb-release mechanism for use on aircraft. (419,563.)
- 36,619. GIANOLI, M. L. Automatic stabilizers for aeroplanes, vessels, torpedoes and the like craft. (419,568.)

APPLIED FOR IN 1934

- 5,865. MARCUS, E. Toy aeroplanes. (419,498.)